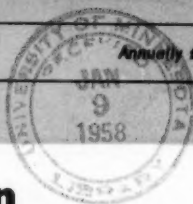


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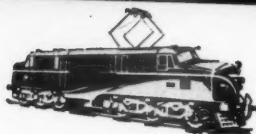
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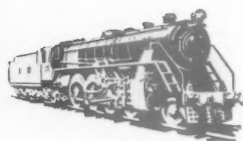
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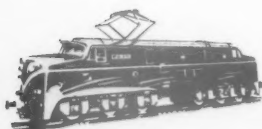
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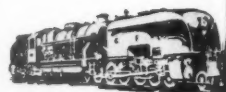
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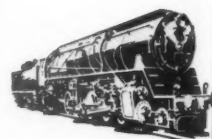
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Progress in Railway Modernisation

DETAILS of Government intentions for the railways in the light of enforced reductions in capital expenditure continue to emerge in penny numbers from answers to questions in Parliament, but a full statement of the effect on the modernisation plan is still lacking. One difficulty is the rise in prices, known to have increased the full cost of the 15-year modernisation plan, as originally conceived in 1955, from £1,200 million to £1,500 million. In 1958 the British Transport Commission proposes to invest £145 million in the railways, against the original proposal of £135 million, and a similar amount in 1959, against £140 million. Whether this represents lessened activity on the ground is hard to say. Electrification works are well advanced. The first main-line diesel locomotives ordered under the plan are being delivered. Mr. Harold Watkinson, Minister of Transport & Civil Aviation, stated in Parliament last week that it would not now be possible to accelerate by as much as had been hoped the programmes for main-line diesel locomotives, for some rolling stock—including, we believe, railcars—and for station improvements, and that the programme for the fitting of continuous brakes to some mineral wagons had also to be slowed down. The Minister would not admit that the restrictions on expenditure involved any drastic cut in the plan which could endanger the ability of British Railways so to improve their services as to be able to pay their way

by 1961 or 1962. He was confident that "if they get the utmost capital value out of modernisation," the programme would be completed as planned. What the Commission had wished to do would cost roughly £180 million for all its activities each year for 1958 and 1959; "if it cannot make do with £170 million," he added, "I think it will be lacking a sense of proportion about its capital expenditure." That is all very well. It is some consolation that electrification works, interruption of which would have resulted in stagnation of much capital equipment already installed, is to continue apparently, unchecked; and steady demands for equipment and materials over a longer period may be more welcome to some suppliers than short-term orders. Nevertheless it is most unfortunate that important measures which must go far to improve British Railways services—such as diesel traction and continuous brakes—are to be slowed down.

Diesels for South Africa

BRITISH manufacturers were not successful in gaining orders from the South African Railways against the first bulk tenders for diesel locomotives for that system, issued a year ago. With the announcement, reported in our Contracts and Tenders columns this week, that the S.A.R. is calling for 115 passenger units, or a similar number of freight units, or 208 twin passenger units, locomotive builders in this country have a further opportunity of gaining a footing in a market in which steam locomotives from Britain already—and for many years—have proved acceptable in both price and performance. The tender as issued is vague, perhaps deliberately so. No power-range is given and either diesel-electric or diesel-hydraulic units will be considered. There is also a call for 21 "light-type" units. These machines, to run over 40-lb. rails, are intended for the lines of South-West Africa, known to be high on the list for conversion to diesel traction because of the lack of water in the region. South African opinion is understood to hold that no existing type of diesel is suitable for South-West African conditions.

E.C.A.F.E. Railway Sub-Committee

THE fifth session of the Railway Sub-Committee (of the Inland Transport Committee) of the United Nations Economic Commission for Asia & the Far East (E.C.A.F.E.) met earlier this month in Bangkok. Most of the member countries are reported to have been represented. They include not only those of Southern and S.E. Asia and the Far East, but also Australia, France, the Netherlands, New Zealand, the United Kingdom, the U.S.A., and U.S.S.R. The agenda included consideration of the progress report on the United Nations Railway Training Centre at Lahore; the relationship between vehicle design and track loading; the programme of work and priorities; and the report by a working party on diesel locomotives and railcars. Arrangements were made for delegates to make a tour of inspection, after the conference, of the State Railways of Siam and of the Malayan Railway: both these metre-gauge systems have much that is distinctive to show, more particularly in the fields of motive power and rolling stock and of civil engineering.

Co-operation Between Asian Railways

THE absence of physical connection between many railways in Asia and their diversity of practice at present render impracticable an international organisation for that continent as close-knit as the International Union of Railways (U.I.C.); to the latter belong the major railways of Europe (with the U.S.S.R., though not a member, participating in certain activities), North Africa, the Near East and, as associate members, Japan and India. Some of the most valuable work of E.C.A.F.E. is done in the training school at Lahore, to which much of the signalling and allied equipment was presented by British manufacturers. That establishment, with its facilities for instruction in advanced operating and signalling techniques, is of great help to some of the smaller undertakings which would find it hard to provide such advanced training from

their own resources; in addition, it enables those concerned to exchange views and pool experience. There is, however, as the Railway Sub-Committee agenda shows, extensive scope for co-operation between the railways of Asia, more particularly in research.

Traffic Management in the Eastern Region

THE new traffic organisation in the Eastern Region of British Railways is approaching completion. As recorded in previous issues, the three Line Traffic Managers, Great Northern, Great Eastern, and London Tilbury & Southend, have already assumed their appointments. Next Monday, the three Traffic Managers on the Eastern Line, at Liverpool Street, Cambridge, and Norwich, who report to the Line Traffic Manager, Mr. W. G. Thorpe, will take over control of their respective districts; there, it is stated, they will exercise a greater degree of authority than has hitherto been devolved from headquarters—and to relatively young men. At Cambridge last week, to mark this development in railway management and to send the Traffic Manager, Mr. W. A. G. Suddaby, and his staff on their way, the new district headquarters building was opened by Sir Hamilton Kerr, M.P. for Cambridge City. The gathering included Sir Reginald Wilson, Chairman, and other Members of the Eastern Area Board; Mr. H. C. Johnson, General Manager designate, and officers of the Region; and representatives of the many interests in the Eastern Counties with which Mr. Suddaby will be dealing. The architecturally pleasing, efficiently planned structure is called Great Eastern House—a name with proud railway associations.

U.S.A. Traffic Trends

WHILE the railway share of United States traffic still continues as a whole to decline, certain railways are an exception to the general trend. For example, passenger revenue on the Chicago, Burlington & Quincy Railroad rose 5 per cent in 1956 and another $4\frac{1}{2}$ per cent during the first eight months of 1957. The Wabash also has enjoyed a continued upward movement over the same period, and the Illinois Central reports an arrest of the decline in 1955 and no further loss since. But over the entire country the railway share of inter-city passenger miles fell from 4.3 per cent in 1955 to 4.1 per cent in 1956, and the share of public road transport from 3.8 to 3.6 per cent, whereas the air transport share was up from 3.4 to 3.7 per cent. What may surprise many people outside the U.S.A. is that private motoring accounts for the whole of the remainder—nine-tenths of the whole. As to freight, according to Interstate Commerce Commission statistics, the railway share of inter-city carrying fell to 48.2 per cent of the total in 1956, as compared with 49.4 per cent in the previous year; road carriers increased their proportion from 17.7 to 18.7 per cent.

Birmingham Underground Railway Plan Postponed

THE plan put forward two years ago to provide Birmingham with an underground railway of its own has been postponed by the City Council until 1963. If built, this railway would resemble many urban lines on the Continent, in that it would be laid, on the outskirts of the city, on the central reservation strips of dual carriageway roads, using the former 3-ft. 6-in. gauge tram routes brought up to the necessary standard. In the centre of the city it would be a true underground line, with stations, probably, at the Horse Fair, New Street Station, Snow Hill Station, Central Fire Station, and Bagot Street. The line would be some 14-15 route miles long and has been estimated to cost £14 million. Since the plan was first put forward, Mr. Harold Watkinson, Minister of Transport & Civil Aviation, has approved the first part of the inner ring road scheme for Birmingham, and it is thought that this may reduce the traffic congestion which first led to the underground railway proposals. When the scheme is reconsidered in 1963, account will be taken of the traffic

situation at that time. If the experience of other large cities in the Americas and Europe is to be relied on, congestion is likely to be such that this urban railway, with its potential capacity of some 50 million passengers a year, may yet be built.

Electrification Extension in the Rhine Valley

ELECTRIC traction was inaugurated recently between Frankfurt and Heidelberg. This affords through electric haulage (at different voltages, in the case of Switzerland and Italy) from Frankfurt (via Basle) to the Riviera, Rome, and (over the Straits of Messina train ferry) Palermo; also (via Salzburg) to Vienna and Trieste. At the same time, electric working began between Darmstadt and Mainz-Bischofsheim. Some 1,600 route-miles of the German Federal Railway in Western Germany are now electrified, mostly at 15,000 V. Conversion is not yet finished between Aschaffenburg, Hanau, Offenbach, and Frankfurt, but electric working over this section is due to begin on January 1, 1958. Work is also in progress on conversion of the section Mainz-Koblenz-Remagen; at the last-named point connection will be made with the Ruhr electrification, now in progress. It is not, apparently, intended at present to link up the Ruhr network with the Dutch 1,500-V. or Belgian 3,000-V. systems; so that electric working through from the Hook of Holland or Ostend to Germany is unlikely in the foreseeable future.

Extensive Doubling in South Africa

THE South African Railways administration recently completed a line-doubling undertaking of exceptional magnitude at a cost of some £7,500,000. It is one of the final items in a Union-wide programme of doubling estimated to involve an expenditure of £22,000,000. The section doubled is the 229-mile Orange Free State main line; some of the works involved are described on another page. Among them is the new bridge for the additional track over the Vaal River, consisting of three main 150-ft. spans flanked by short concrete arched approaches. It is of interest for two reasons; its concrete piers are founded on solid coal and the method of launching the superstructure as a continuous span over manually-rotated rollers is unusual. To secure precision control over the forward movement of the 780-ton superstructure, the rollers in frames fixed over the near abutment were geared to hand-worked cranks. In this way the speed of launching could be varied and halted within a fraction of an inch from any required position. Complete success appears to have attended the introduction of this method, which may well be of value in many countries, such as India, where bridge building and re-girding are frequent. The design, manufacture and marketing of suitable roller-operating gear might also be a commercial proposition.

Closure of the Easingwold Railway

ONE of the very few remaining small, independent, standard-gauge railways of Great Britain is enjoying its last days of operating life. The Easingwold Railway is being closed on December 30. The long, straight stretch of the main line of the former North Eastern Railway between York and Thirsk misses Easingwold by about two miles, and a branch to it from the York & Newcastle Railway was authorised in July, 1847, but not built. There was a scheme of 1863 for a new trunk line from Leeds to Stockton, which would have run through Easingwold, but again the district was left unserved by the failure of the project. Eventually, local interests secured powers to build a branch to Easingwold from the main line at Alne, and the Easingwold Railway Company was incorporated by Act of August 23, 1887. Its 2 miles 37 ch. were opened on July 27, 1891. During most of its life the railway owned its own locomotive; but, since 1947, the line has been worked by locomotives hired from British Railways. Passenger services were withdrawn on November 29, 1948. The North Eastern will provide cartage services, based on York, for both parcels and freight traffic.

Panel Signalling and C.T.C.

DIVERGENCES of opinion on matters connected with the increasing use of the latest types of power signalling were revealed at the question-and-answer meeting held in London by the Institution of Railway Signal Engineers on November 21. It was satisfactory to hear from speakers engaged in maintenance, as their views are valuable to those developing new designs or trying to improve existing ones. There is usually something to be said for and against any particular practice, for local conditions frequently exert a more than ordinary influence when signalling is concerned.

In relay interlocking installations, for instance, the switches or buttons can be arranged on the track diagram itself or be grouped separately in front; or a combination of these ideas can be adopted. In certain countries one or other plan seems likely to have established itself as standard for the future, whereas in others the choice is dictated by circumstances. It was stressed in the discussion that operating practice could exercise much influence on this. In some parts of Europe one often sees the signalmen working under the direct control of one or more supervisors, responsible for deciding what movements shall take place, and when; in others such an arrangement as this is never seen, and the working resembles that always followed in Britain. The precise method used for selecting the routes, which determines the number and function of the switches and/or buttons, itself influences the design of the equipment and may make the locating of them on the diagram practically out of the question in a layout of any complexity. The necessity for always pressing two buttons simultaneously, a feature of certain systems, must limit the size and arrangement of panels; this is particularly the case where there is only one operator. For these and other reasons we appear likely to see a continuance of some variety of design in these matters. One question related to the use of three-phase power for point machine circuits, as seen now on the Continent, where higher voltages have been adopted to reduce the size of cable conductors; but strong arguments can be advanced for retaining d.c. working, with ability to use battery standby, while considerable objection understandably is felt by many to using high voltage equipment to be handled by maintenance staff out on the ground.

An important point debated concerned the application of C.T.C. in British conditions. This brought out the necessity of defining clearly what is meant by that term. It is often used to denote a plain remote control, or extra long-distance power signalling, and the situation has arisen from the fact that it became applied in this country to apparatus brought from the U.S.A. and developed there to begin with, to meet local circumstances largely peculiar to that country. There the traffic itself always had been centrally controlled, in that a dispatcher directed it along a given section of line under his personal authority, which had to be obeyed without question. On most routes, particularly on the single lines, the points at crossing loops and sidings were hand operated on the ground; this necessitated frequent stops for many trains. The result was that apparatus which would put their working in the dispatcher's hands was welcomed eagerly as contributing to increased flexibility and speed of working, apart from safety considerations. It came to be known as C.T.C., though it merely rendered more scientific and economical an existing centralised mode of train operation. When the apparatus, which used circuits not seen hitherto in power signalling, but essential to achieve the much longer range now called for, spread to other countries the term C.T.C. became used to designate it. But its application differed from that known under the American train dispatching; remote control would have been a clearer term.

It is known, however, that plans are in contemplation to adopt methods coming nearer to the original C.T.C. conception for some sections of British Railways. Such have been considered indeed on several occasions over the past 20 years or so; but where a line is already fully

signalled on well-tryed methods familiar to all trainmen, the position is quite different from that facing the American traffic officer when such apparatus was first proposed as was indeed emphasised in the recent I.R.S.E. discussion. It is quite certain that remote control, whatever precise form it may take, will be used increasingly in Great Britain, for the whole trend of conditions generally renders it inevitable.

Connected with this question was that of how far electronic apparatus was likely to find application in signalling. That it will do so to some extent will, we think, be generally agreed. Indeed a beginning already has been made; but it was pointed out that it would not be possible to rely on such equipment for vital safety circuits and functions until it could be so constructed that no danger side failure could be produced by a simple breakdown and the requirements so long insisted on in this respect satisfactorily met. Other points such as the necessity or otherwise of labelling wiring permanently and the use of the banner signal for repeating another type immediately ahead provoked interesting debate and again proved the value of holding this kind of meeting from time to time.

Bridging the Brahmaputra

EXPANSION of the Indian economy and the accompanying growth of railway traffic, both actual and expected, have caused the Government of the Republic to make a start on the bridge over the Ganges at Mokameh, in Bihar, and to decide to start work next year on the Brahmaputra bridge near Pandu, in Assam, as recorded in our November 8 issue. Both these major projects were long considered in the days of British control, but were not put in hand, largely because funds were lacking, or the revenue from traffic was not deemed sufficient to justify the cost. As described in several previous issues of this journal, good progress is being made on the Mokameh bridge, which will carry the broad-gauge track of the Eastern Railway from the right (south) bank of the Ganges to link up with the metre-gauge North Eastern Railway.

The question of bridging the river Brahmaputra has been under consideration by the Government of India for many years. Such a bridge would convey the metre-gauge line of what is now the North Eastern and will shortly be termed the North East Frontier Railway from the north (right) to the left bank of the river. Two sites in Assam were considered: (1) between Amingaon (right bank) and Pandu, and (2) at Jogighopa, about 100 miles downstream. The proposed bridge near Pandu was first considered in 1910; in 1937, an abstract estimate for its construction was prepared after more detailed investigations. In 1943, to satisfy the strategic requirements of the Burma campaign, building was taken in hand to the extent of transporting some materials. The work was stopped in 1944 as a result of a decision by the Allied Governments. A considerable part of the objectives of a bridge was achieved by increasing the capacity of the Amingaon-Pandu wagon ferry, which on several occasions conveyed 1,000 metre-gauge four-wheel wagons (or the equivalent) in each direction in one day. A road vehicle ferry also was brought into operation at Jogighopa.

A bridge at Amingaon/Pandu would be about 4,200 ft. long. This site is suitable from all considerations, except that the railway from Fakiragram to Amingaon lies across the vulnerable Beki-Monas basin where washouts are frequent and earthquakes not unknown. However, it is possible normally to keep this portion of the line open without undue difficulty and expense.

The Jogighopa site for the bridge was surveyed and investigated after the war, in 1946. A bridge here would have to be about 7,500 ft long, and a new railway line of about 110 miles would have to be constructed from Pandu to Bongaigaon (where it would rejoin the existing line to Amingaon) via Jogighopa. The approaches to the bridge will avoid the Beki-Monas basin on the right bank and

traverse stable country on the left bank. Construction of a bridge at the Jogighopa site, however, is likely to present some engineering problems which may not be easy to solve.

The daily transport capacity required beyond Pandu by 1960-61 is the equivalent of 350 metre-gauge wagons and five passenger trains. This excludes traffic required for any oil refineries which may then be located in the area (apart from existing traffic from the oilfield in North East Assam). With rapid industrial development all over India, it is expected that by the end of another 10 years, the railway transport requirement of the Assam Valley will grow to about 550 wagons and six or seven passenger trains daily.

The advantages and disadvantages of the two sites again have been considered and it has been decided to site the bridge at Amingaon/Pandu. The site is considered to have the following advantages: (a) it is stable, or has remained stable for centuries; (b) the length of bridging will be about 4,180 ft., i.e. 10 spans of 400 ft. clear; (c) no river training work of any magnitude would be necessary; (d) the depth of foundation would be within reasonable limits; (e) railheads already exist; (f) no unknown engineering difficulties are anticipated in construction or maintenance; (g) work can be taken in hand without further detailed investigations. The site involves deep well sinking with steel caissons, to depths of about 160 ft. below low water level.

British Transport Commission Traffic Receipts

THE increase of £548,000 in British Railways passenger receipts over the 1956 figure for Period 12, the four weeks ended December 1, was caused largely by the rise in fares in mid-September. At £8,386,000 receipts compare with £9,059,000 for Period 11; this decrease is the result presumably of the almost total cessation of holiday travel after October. It might have been hoped that the various cheap travel facilities in force during the late autumn and winter, not to mention football and other excursions, would have added more to traffics. The increase over 1956 in the British Transport Commission ships' passenger traffics, by £24,000 to £188,000, is gratifying; it would be interesting to see how these traffics are divided between the North Sea, English Channel, and Anglo-Irish services.

	Four weeks to December 1		Incr. or decr.	Aggregate for 48 weeks		Incr. or decr.
	1957	1956		1957	1956	
	£000	£000	£000	£000	£000	£000
Passengers—						
British Railways	8,386	7,838	+ 548	128,976	116,690	+ 12,286
London Transport:						
Railways	1,804	1,791	+ 13	21,243	20,340	+ 903
Road services	4,516	4,319	+ 197	54,882	51,289	+ 3,593
Provincial & Scottish buses	4,151	3,967	+ 184	53,393	52,558	+ 835
Ships	188	164	+ 24	6,589	6,047	+ 542
Total Passengers	19,045	18,079	+ 966	265,083	246,924	+ 18,159
Freight, Parcels & Mails—						
British Railways:						
Merchandise & live- stock	8,663	9,076	- 413	99,971	96,817	+ 3,154
Minerals	4,461	4,435	+ 26	49,447	48,066	+ 1,381
Coal & coke	11,183	10,834	+ 349	117,700	116,474	+ 1,226
Parcels, etc., by passenger train	4,227	3,830	+ 397	47,121	43,726	+ 3,395
Collection & deli- very, etc.	1,018	1,036	- 18	12,393	11,863	+ 530
Total Freight British Railways	29,552	29,211	+ 341	326,632	316,946	+ 9,686
Others*	4,462	4,443	+ 19	51,347	51,709	- 362
Total Freight, Parcels & Mails	34,014	33,654	+ 360	377,979	368,655	+ 9,324
Total	53,059	51,733	+ 1,326	643,062	615,579	+ 27,483

* Inland waterways freight, road haulage, and ships.

British Railways merchandise and livestock traffic at £8,663,000 is £413,000 below last year's figure for the period. After the slight rally shown in Period 11, this drop is disappointing. On the other hand, coal class traffic is slightly up on 1956; the indications are, however, that this traffic must be competed for against the road haulage which many consignees now demand for their coal and coke. British Railways total freight receipts for the four weeks at £29,552,000 are only £341,000 above those for Period 12 of 1956. The aggregate traffic receipts of the Commission for the 48 weeks to December 1 at £643,062,000 exceed last year's aggregate by £27,483,000. Traffic receipts must improve if the Commission is to achieve a balance of revenue and expenditure by 1961 or 1962.

PERCENTAGE VARIATION 1957 COMPARED WITH 1954

	Four weeks to December 1	48 weeks to December 1
British Railways—		
Passengers	+ 6.9	+ 10.5
Parcels	+ 10.3	+ 7.7
Merchandise & livestock	- 4.5	+ 3.2
Minerals	+ 0.5	+ 2.8
Coal & coke	+ 3.2	+ 1.0
C. & D. services	- 1.7	+ 4.3
Total	+ 2.3	+ 5.0
Ships (passengers)	+ 14.6	+ 8.9
British Road Services, Inland Waterways and Ships (cargo)	+ 0.4	- 0.7
Road Passenger Transport, Provincial & Scottish	+ 4.6	+ 1.5
London Transport—		
Railways	+ 0.7	+ 4.4
Road services	+ 4.5	+ 7.0
Total	+ 3.4	+ 6.2
Aggregate	+ 2.5	+ 4.4

Kowloon-Canton Railway

THE General Manager of the Kowloon-Canton Railway (British Section), Mr. I. B. Trevor, has sent us a copy of his report for the year ended March 31, 1957. Its unusual incidents included a serious boiler explosion in an "austerity" 2-8-0 locomotive, killing six members of the staff. Negotiations with Republican China for re-establishing a through train service with Canton, which had been proceeding satisfactorily since November, 1955, between the railway officials concerned, were broken off for political reasons in August, 1956.

Despite four days' serious rioting during a festival in that month, necessitating the cancellation of many trains and estimated to cause a loss of \$80,000 to the railway, traffic earnings for the year under review showed an improvement over those for the previous year of \$1,990,817 or 39 per cent (\$16 Hongkong = £1). Meanwhile, total train-kilometrage was reduced by 4 per cent. Local and non-local passenger journeys increased by 10.6 and 143 per cent respectively. Goods tonnage was higher by 26.29 per cent. The following are some of the principal purely railway results compared with those for 1955-56:—

	1955-56	1956-57
Railway operating revenue	\$ 5,814,866	\$ 7,915,939
" " expenditure	3,724,879	3,920,284
net " revenue	2,089,987	3,995,655
Passenger receipts	3,609,837	5,117,041
Goods	1,820,589	2,387,248
Train-kilometrage run	388,450	374,883

Two diesel-electric locomotives supplied by the Clyde Engineering Co. Pty. Ltd. of Sydney, regularly worked all local passenger trains during the year; their availability was virtually 96 per cent, and would have been 99 per cent but for three weeks' delay in obtaining spare parts for one of them from the makers. Repair costs worked out at \$0.159 per locomotive-kilometre run. A further three of these engines were ordered for delivery during 1957-58.

Colonel Wilson's Annual Report

THE report for the year 1956 of the Chief Inspecting Officer of Railways, Lt.-Colonel G. R. S. Wilson, shows an increase in the number of train accidents, properly so called, compared with 1955 from 1,156 to 1,226. This was accompanied, however, by a decrease in the number of casualties and also of failures of permanent way, structures and rolling stock.

No passenger was killed in a train accident, but three servants and 15 other persons lost their lives, 13 of the latter in vehicles at level crossings. Some accidents would have been much more serious had the attendant circumstances been different as, for example, at Ludlow, when the two rear coaches of the first train were demolished but fortunately were not passenger vehicles, or the buffer stop collision at Filey, where only an empty train was concerned. There was a decline in the number of passengers injured in train accidents from 759 to 474 and from servants from 91 to 78, also of other persons from 66 to 38.

There were 212 such accidents at level crossings. 10 more than in 1955; 151 of these were collisions with gates across the railway and 61 with road vehicles; 13 of the latter were at public and 48 at occupation crossings. At public crossings three occupants of road vehicles were

Inspecting Officers of Railways for some time, and a study of practice on the Continent was made in 1956 by a special party, the report of which appeared in April, 1957, recommending that experiments be made in Great Britain with similar equipment.

Analysis of the train accidents shows that failure on the part of operating staff was responsible for 52.2 per cent, again a little more than in the previous year. Train crews had to answer for 168 collisions and 70 derailments and signalmen for 30 and 20 respectively; technical defects, in many cases with human failure associated, led to 14 collisions and 78 derailments, 10.1 per cent of the total, against 12.1 in 1955. There was an increase from 15 to 22 in the cases attributable to snow, landslides and floods, while misconduct of the public was responsible for 265 accidents against 227 in 1955. There were fewer fires in passenger trains, 66 against 107, caused mainly by sparks from steam engines, although some by the throwing down of lighted matches or cigarettes. The marked decrease probably was due to the wet summer.

Total route mileage open at the commencement of the year was 19,288 and fell by 36 in the course of it, mainly by the closing of unremunerative branch lines. No electrification envisaged in the modernisation plan was brought into operation, but electrified track mileage increased by 65 to 3,203 miles, with the extension of the

TRAIN ACCIDENTS: PRIMARY CAUSES

	Collisions	Deraillments	Running into obstructions	Fires in trains	Miscellaneous	Total
1. Failure of train crews (including guards):—						
(a) Passing signals at danger	11	15	11	—	—	37
(b) Other irregularities or want of care	157	55	59	1	4	276
2. Failure of signalmen:—						
(a) Irregular block working	13	1	—	—	—	14
(b) Other irregularities or want of care	17	19	16	—	—	52
3. Failure of other operating staff	71	13	85	4	3	176
4. Failure of train crews and/or signalmen and/or other staff	40	9	24	—	—	73
5. Faulty loading	3	8	—	1	—	12
6. Technical defects:—						
(a) Engines	3	14	—	6	—	23
(b) Vehicles:—						
(i) Drawgear	6	7	1	—	—	14
(ii) Other	4	29	6	7	3	49
(c) Track or signalling apparatus	1	28	4	—	—	33
(d) Defective structures (other)	—	—	3	—	2	5
7. Other causes:—						
(a) Snow, landslides, floods	3	—	19	—	—	22
(b) Animals on the line	—	—	77	—	—	77
(c) Misconduct of the public	145	1	107	8	4	265
(d) Miscellaneous	12	17	15	47	7	98
Total	486	216	427	74	23	1,226

killed while 10 others lost their lives in nine accidents at occupation crossings. Twenty pedestrians were killed at all types of crossing including footpath. It was not necessary to hold a formal inquiry into a crossing accident but a number were the subject of correspondence or discussion. There are about 4,256 crossings over public roads at 249 of which no gates exist, mostly on light railways or lines of light traffic with severe speed restrictions. Occupation crossings number 21,311. Comparison with previous years shows that the accident figures have not changed very much, despite the continued increase in motor traffic which, says the report, "may suggest that more care is being taken by road users and farm workers." This is "the only way to prevent accidents at the 21,000 occupation and accommodation crossings and the danger that may arise to rail traffic was emphasised by the complete derailment of a steam passenger train at about 50 m.p.h. in 1955." It is also pointed out that "the risk of derailment is greater with the lighter axle loads of the diesel trains which are increasing in number. . . ." One of these, in fact, struck a stalled tractor on a crossing between Swaffham and Dunham, but fortunately nobody was injured. "Accidents at public level crossings caused by failures of crossing keepers or other railway staff are few and far between" says Colonel Wilson, "but they can be avoided by the use of lifting barriers controlled automatically by track circuit . . . and to some extent by remote operation from the nearest signalbox." This subject has been under consideration by the British Transport Commission and the

overhead system from Shenfield to Chelmsford and Southend. Passenger journeys increased by 2.2 per cent and passenger miles by 3.2; freight tonnage was greater by one per cent, and total main line mileage by nearly four, from 363 to 376 millions.

Of the 50 collisions and derailments attributable to signalmen's errors, 14 arose from irregular block working, against 11 in 1955 and nine in 1954, with an average of 12 for 1951-1955 and 1946-1950. One case involved inexcusable mishandling of the rotary interlocking block. The increase in such accidents "is to be regretted," states Colonel Wilson, but "the figures are very small in relation to the amount of traffic which is handled with safety every day by the 27,000 signalmen on the British railways." Referring to this and another serious case the report characterises them as "quite exceptional and in no way typical of the outlook of signalmen as a whole on their very responsible duties." Failures by ground operating staff other than signalmen resulted in 84 collisions and derailments compared with 56 in 1955 but fewer were caused by faulty loading of goods, the 12 cases comparing with an average of 20 for the previous three years. None of the eight derailments so caused was serious but the report stresses that "the staff should bear in mind that carelessness in securing or examining a load has resulted on more than one occasion in a serious accident with loss of life."

An increase is recorded in the cases due to errors of train crews, primarily responsible for 238 collisions and derailments compared with 204 in 1955. "In general," says

Colonel Wilson, "drivers, firemen and guards are no less competent and conscientious than the signalmen, and the higher actual numbers of accidents which are caused by their mistakes every year reflect the entirely different character of the work in which safety depends almost entirely on personal attention to duty." Against this rising tendency of the last few years is to be set the steady decline since the war in accidents resulting from disobedience to signals; there were 37 such in 1956 against 53 in 1955, and seven of them might have been prevented by warning type A.T.C.; the accident at Ludlow was one of the very few cases of failure to respond to a warning at the distant signal. Trials of the British Railways system were concluded successfully during the year, a satisfactory standard of reliability being attained and after final inspections and test runs, the Minister's approval was confirmed on November 30. Plans to deal with all main traffic routes are being pressed forward and it is intended to equip more than 1,300 route miles and some 10,000 locomotives and other motive power units by the end of 1962.

FORMAL INQUIRIES

Eight formal inquiries were found to be necessary compared with 18 in 1955. As usual, the report gives a concise

account of the essential facts involved in each instance. As the individual reports were summarised in our pages and illustrated by diagrams, soon after publication, only a few remarks on the more serious cases are required here. The accident at Filey Holiday Camp station on August 25 arose from gross negligence on the part of a driver and guard, senior experienced men, and it was "not the first occasion on which they failed so deplorably to obey the rules for train working." The driver had not satisfied himself that the fireman had connected the vacuum pipes between engine and train and the guard had not tested the brake before starting and then did not travel in his van. Engine and tender alone had brake power and the train got out of control on a long falling gradient and ran into buffer stops at about 25 m.p.h. The engine mounted the station concourse, fortunately promptly cleared of passengers, and another train was stopped in time clear of the runaway, which was composed of empty stock. At Ludlow, on September 6, in the early hours before dawn, a parcels train passed the distant signal at caution and two stop signals at danger without any reduction of speed and overtook at 40-50 m.p.h. an express stopped out of course following damage to crossing gates ahead. The driver maintained that the distant signal was

CASUALTIES IN TRAIN AND MOVEMENT ACCIDENTS

	Total	Killed				Injured				All casualties per million train miles	
		Total	Passengers	Railway servants	Other persons	Total	Passengers	Railway servants	Other persons	Killed	Injured
1915-19	6,122	616	174	341	101	5,506	1,731	3,600	175	1.8	16.5
1920-24	6,638	407	92	248	67	6,231	2,577	3,518	136	1.1	17.0
1925-29	7,526	368	91	210	67	7,158	3,733	3,267	158	0.9	18.0
1930-34	7,440	308	74	183	51	7,132	4,394	2,592	146	0.7	17.0
1935-39	8,376	338	86	198	54	8,038	5,342	2,576	120	0.8	18.0
1940-45	1,222*	477	141	254	82	745*	256*	455*	34*	1.2	1.9*
1946-50	8,878	347	91	204	52	8,531	5,647	2,763	121	0.9	21.2
1946	9,529	413	120	236	57	9,116	5,691	3,281	144	1.0	22.6
1947	9,203	409	148	218	43	8,794	5,871	2,785	138	1.1	22.9
1948	8,683	340	87	191	62	8,343	5,554	2,678	111	0.9	20.9
1949	8,651	285	44	188	53	8,366	5,640	2,625	101	0.7	20.2
1950	8,329	290	60	187	43	8,039	5,483	2,446	110	0.7	19.5
1951	8,176	283	97	158	28	7,893	5,328	2,482	83	0.7	19.2
1952	8,470	386	160	180	46	8,084	5,505	2,472	107	0.9	19.7
1953	7,771	306	66	185	55	7,465	5,051	2,304	110	0.7	18.0
1954	7,558	211	40	139	32	7,347	5,029	2,229	89	0.5	17.8
1955	7,573	288	89	162	37	7,285	5,083	2,089	113	0.7	18.3
1956	7,529	237	49	147	41	7,292	5,166	2,044	82	0.5	17.7

* Serious injuries only

ACCIDENTS, EMPLOYMENT, AND OPERATING STATISTICS

	Class I		Railway servants (March)	Passenger journeys originating (incl. season tickets)			Freight-tonnage originating (excl. free hauled)	Ton-miles (incl. free hauled)	Miles operated			Passenger-miles (estimated)		
	Train accidents	Failures of rolling stock or permanent way		Total	Main line railways	London Transport			Main line railways			London Transport: Train	Main-line railways	London Transport
									Train	Shunting	Other			
	Number		Thousands	Millions										
1920-24 ..	1,009	11,153	699 ^a	1,848	—	—	303	17,457	369	121	28	—	—	—
1925-29 ..	941	9,141	679	1,661	—	—	298	17,562	401	123	29	—	—	—
1930-34 ..	796	7,772	602	1,612	—	—	270	16,060	416	113	27	—	—	—
1935-39 ¹ ..	745	4,149	592	1,733 ^a	1,255 ^a	478 ^a	281	17,230 ^a	412	115	29	32	18,993 ⁴	2,297 ⁴
1940-45 ¹ ..	387	160	604	1,661	1,210	451	288	23,844 ⁴	356	124	37	26 ⁴	33,191 ⁴	2,608 ⁴
1946 ..	1,237	5,162	652	1,855	1,266	589	262	20,639	373	116	36	30	29,231	3,029
1947 ..	1,388	4,679	660	1,714	1,140	574	257	20,190	355	113	35	31	23,015	3,095
1948 ..	1,293	4,398	703	1,646	996	650	276	21,502	366	112	41	34	25,093	
1949 ..	1,176	4,062	648 ^a	1,634	993	641	280	22,010	381	109	41	34	24,958	
1950 ..	1,156	3,609	628	1,613	982	631	281	22,135	384	105	40	34	23,898	
1951 ..	1,280	3,436	622	1,624	1,001	623	285	22,902	376	104	40	35	24,302	
1952 ..	1,243	3,022	625	1,574	989	585	285	22,391	376	101	40	35	24,048	
1953 ..	1,123	2,675	616	1,565	985	580	289	22,766	379	100	40	34	24,143	
1954 ..	1,197	2,504	600	1,566	991	575	283	22,089	378	97	40	34	24,235	
1955 ..	1,156	2,080	586	1,543	967	576	274	21,353	363	92	38	35	23,777	
1956 ..	1,226	2,009	593	1,577	1,005	572	277	21,473	376	92	38	36	24,546	

¹ Having regard to the altered basis under the Modification Order, fewer accidents were reportable and only serious damage is included as from September 1, 1939, to December 31, 1945. The comparison is unchanged as regards traffic, movement and staff employed

² Four years, 1921-1924

³ Four years, 1935-1938

⁴ For year ended August, 1939, only

⁵ Estimate for main lines—1942-1945

⁶ Loaded only

⁷ Three years, 1943-1945

⁸ Railways and London Transport Executive's Staff only

off and that he had received the clear A.T.C. bell ring. He admitted to not seeing the first home signal but said he observed the second, 350 yd. from the obstruction and tried to stop. The siren of the cab apparatus was found jammed by a thread of cotton waste, but this could not have affected the automatic brake action, and the conclusion was that the driver was not properly alert and involuntarily cancelled the brake application without realising it. A programme of fitting covers to prevent entry of foreign matter into sirens was accelerated as a consequence of the accident and should by now be about completed.

An instance of insufficient care in the transmission of verbal messages, made necessary by a track circuit failure, occurred at London Bridge on October 22, leading to the wrong train being started on a hand signal and directed down an up line on which an incoming train was approaching. Both motormen were alert and one train had practically stopped when the other struck it at about 15 m.p.h. It was recommended to amplify the instructions, to ensure messages affecting train movements being given in clear, unmistakable language and repeated by their recipients. A rule covering the securing of power-worked points had not been observed, but in the particular circumstances these were rigidly locked and the procedure was unnecessary for safety. It was considered undesirable to retain a rule no longer required, especially when it might cause delay, and this is being reviewed in relation to modern signalling practice.

A derailment at Droylsden on November 22, drew attention to the importance of using the simple cant gauge instead of relying on the eye to ensure maintenance of track level, also the need to reduce the clearances in tender axle boxes to conform to modern standards and weigh engines and tenders after repair work likely to affect wheel loading. Another derailment caused by a broken rail end between Brookwood and Farnborough occurred on the same day, and it was decided to bring forward the renewal programme as it was the second such failure in the area in six months. Timely detection of rail cracks is being made more sure by using ultrasonic equipment, and as the incidence of rail failures involves many factors the British Transport Commission is conducting a programme of research into the subject generally.

Carelessness and want of discipline in the signalbox led to a collision at Newlay & Horsforth, again on November 22. False register book entries and consequent misunderstandings were followed by an irregular use of the cancelling apparatus of the rotary interlocking block and acceptance of a train into an occupied section. Inquiries revealed other serious irregularities during the month before the accident, drawing attention to the importance of adequate supervision of signalmen's work. It was recommended to cross-check train registers at regular intervals.

The report also gives particulars of a number of other accidents dealt with by correspondence without formal investigation, disclosing a variety of operating faults by various grades from all of which some lesson may be learned. These included cases of misreading of colour-light signals on adjacent lines, want of care in acting on calling-on indications and irregular station working. A curious case occurred at Hayfield where a freight train entered the single line section without its guard and the signalman allowed an engine to follow—of course without a token—to take the guard to it. The other driver had begun to propel his train back to pick him up and a head-on collision ensued. A buffer stop collision at Glasgow Queen Street arose from total failure of the steam brake when a driver who had shut a valve to stop a leak of steam found he could not re-open it. Another such collision at Folkestone was due to a sponge cloth becoming drawn into the vacuum train pipe; a grille designed to prevent this had become displaced. Among cases dealt with without formal inquiry was one of irregular electrical release of approach locking freeing facing points for movement in front of a train against which risk precautions

are now taken, and one of a false clear light being given by a street lamp shining through the green glass of an extinct signal, leading to the shielding of the lamp.

EQUIPMENT, RAILS, AND STRUCTURES

Failures of these totalled 2,009, 71 less than in 1951. Reportable failures of engines and rolling stock other than coupling failures also were somewhat fewer, 100 against 116 in 1955, but there has been no great change in this figure for the last six years.

No failure of engine machinery, springs, and so on, called for special comment nor was any bursting of a boiler or tubes recorded during the year. Failures of engine and tender tyres and axles were fewer but breakage of a tender axle led to derailment of a freight train and a broken engine axle to that of a passenger train. Both axles were over 50 years old and had extensive fatigue flaws. All locomotive axles over 40 years old are being replaced as quickly as possible and the development of ultrasonic testing is being pushed forward. It has proved very effective in dealing with carriage axles.

The number of broken rails has been declining since 1951 and totalled 234 in 1956. The report mentions a case where a dead engine with excessive hammer blow, as a result of the dismantling of motion and rods, was hauled at excessive speed and crippled, but did not break, a large number of rails. The British Transport Commission is attaching considerable importance to the extension of the use of long welded rails as an insurance against rail end failures; the experimental laying of them on pre-stressed concrete sleepers was continued during the year. No derailment from track distortion in hot weather was recorded, but floods and formation slips occurred during the exceptionally wet summer and occasioned 34 reportable failures from which no accident resulted.

There were also 38 fires in stations and signalboxes, including an exceptional one where a replaced mechanical lever frame on the Central line of London Transport was still in position and litter under it became ignited. Litter has regrettably much increased of recent years in Underground stations and a fresh drive for its removal has been started. Progressive replacement of old and obsolete wagons led to a further fall in coupling failures, which numbered 1,319 for freight trains, or 69 per cent of the average for 1951-1955; for passenger trains failures totalled 253, compared with the 1951-1955 average of 259; again no collision or derailment resulted from division of a passenger train but some freight train breakaways led to mishaps, which will not occur when all have continuous brakes, with the fitting of which good progress is being made.

ACCIDENTS TO SERVANTS

The total of 2,110 casualties—144 killed and 1,966 injured—for servants in movement, as distinct from train accidents was again happily the lowest yet recorded and achieved in the face of an increase of 1.3 per cent of staff employed. The continuous improvement since the war is encouraging and Regional managements are "striving continually for further improvement and . . . an Inter-Regional Study Group which includes strong representation from the Trade Unions has been formed to advise and assist them in this work . . . a notable step in advance." Concluding his review of the year in which 1,577,000,000 passengers were carried without fatality to them in a "train" accident and total fatalities for any kind of movement on rail amounted to 237, or 0.6 per million train-miles, Colonel Wilson remarks that he finds it "difficult to suggest an explanation why more mistakes are being made by train crews in particular. Most of them come under the heading of carelessness or misjudgment of the kind which leads to minor accidents, but there are a number of more serious cases every year." The British Transport Commission is giving attention to this, and Colonel Wilson expresses the hope that this "will be successful in reversing the present trend so as to bring it into line with the creditable improvement in the standard of obedience to signals which has been evident in the last few years."

THE SCRAP HEAP

End of a Famous Viaduct

The Kinzua Viaduct on the Erie Railroad in the U.S.A. is to be scrapped as the result of the abandonment of the 14-mile line between Mount Jewett and Lewis Run. When this viaduct, which is 300 ft. high and more than 2,000 ft. long, was built in 1882 it was the longest and highest of its kind in the world. As originally constructed, it was of wrought iron, but it was rebuilt in 1900 in steel, the reconstruction taking only four months.

Something to Crow About

The British Railways, North Eastern Region, stand at the Northern Poultry Show & Trade Exhibition, 1957, held at Leeds last month, was awarded the Northern Poultry Society silver medal. A striking feature was the fascia; this, with the legend "Something to Crow About," when illuminated, was in pastel pink.

Two hand-painted British Transport Commission crests were mounted on each side panel and on the reverse side of each panel were displayed quadroyal pictorial posters. The stand was designed under the direction of Mr. S. W. Jesper, Public Relations & Publicity Officer, North Eastern Region.

Special Effort

A 76-year-old gentleman recently found himself stranded at Grantham when he expected to be at Newark. He was on his way to Newark by a train from Leeds to London which normally stops there, and did not know it would be diverted that day via Lincoln be-

cause of track repairs south of Retford. When he reached Grantham he was about to catch a bus back to Newark, when one of the station staff called him back, made a telephone call, and then told him that if he would like to go for a rest and a cup of tea, a diesel train would be arranged. This was promptly done, and the passenger much enjoyed his ride by special train—and, no doubt, the view from the front compartment.

Human Touch

Officialdom has been swept aside for those people seriously injured in the Lewisham rail disaster. They have each received a personal letter from Mr. C. P. Hopkins, the Southern Region General Manager. . . . The letters, signed by Mr. Hopkins, promise that his personal representative will continue to keep in touch with all of the injured during their stay in hospital. Well done, British Railways.—*From a letter to "The Star."*

Experiments with Motive Power

The haulage by the Western Region Brown Boveri gas turbine locomotive of the Canadian Trade Mission special train on the run from Paddington to Bristol on November 26, has been the subject of correspondence in the *Swindon Evening Advertiser*.

Lord Forbes had asked why the British Railways train conveying the mission was hauled by a Swiss locomotive. A letter in reply from "R.L.G." pointed out that the delegates did not make all their journeys in the

Western Region in a train drawn by a Swiss locomotive. They had a steam locomotive of a very successful type [a "Castle"] on the journey from Bristol to Cardiff. . . .

"Lord Forbes," he added, "asks whether the use of this Swiss locomotive was in the best interests of British locomotive manufacturers. I think this shows that we are experimenting with more advanced types of motive power, which alone would create a good impression. The reputation that the British locomotive manufacturers (private firms) have built for themselves all over the world is without question."

Mail Train to Granada

After prolonged hand-shaking and discussion, any idea of the diesel was abandoned as being too fortuitous. We would take the mail train, twice as slow, but boasting a first and second class. . . .

Exactly what happened next we are not sure, but our porter appeared to jump the queue, gesticulating and explaining. He returned with tickets, then, buttoning a handful of English cigarettes into his pocket, he placed us triumphantly in an empty first class carriage of the mail train.

This carriage had four wheels and windows shaped like those of a stage coach. As we crawled through the dry, brown country the door would fly open and admit the ticket-collector doing his rounds by clambering along outside. The door was warped, and there was a considerable gap at the bottom, so that anything we dropped was in danger of rolling out and dropping on to the track. It took us 10 hours to travel the 100 miles [from Ronda] to Granada.—*From "The Times."*

1958

It's just as well to pause upon
The threshold of a year,
Look right—left—right and ask oneself:
"Where do we go from here?"
When nature's pageant is usurped
By fog and frost and snow,
It's natural that a railwayman
Some interest should show
In what's in store. He knows that things
Are seldom what they seem—
Has the last word been spoken yet
On diesel versus steam?
Small wonder, too, if he should make
Some silent calculation
Of all the pros and cons involved
In this new automation.
And, if, according to his kind,
He starts to contemplate
The unspoiled months that lie ahead
In 1958,
Down in his very heart of hearts
He knows just where he stands;
He knows that rail prosperity
Lies in his own two hands,
Or thereabouts; with common cause
In board and porter's room.
This brave New Year could usher in
A rail millenium.

A. B.

Temporary Underground Station



Photo]

[J. H. Price

The temporary underground station at Slussen, Stockholm, used by Tunnelbana trains during construction of the through station. Note wire mesh to stop fall of rock particles from unlined roof

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

INDIA

Gudur-Renigunta Gauge Conversion

Freight traffic between Bengal, Orissa, and the East Coast on the one hand, and places south and west of Madras on the other, can now avoid Madras, so obviating congestion in that centre. This has been made possible by conversion of the Southern (formerly Madras & Southern Mahratta) Railway from metre to broad gauge between Gudur, on the East Coast main line, and Renigunta, on the Madras-Raichur-Bombay line.

Diversion of traffic relieves the marshalling yard at Tondiarpet (Madras). The 52-mile converted broad gauge line follows the old line except for a slight deviation at Gudur, Kalahasti, and Renigunta. The existing stations on the way have been altered to deal with increased freight and passenger traffic. One hundred and forty-one bridges, including 13 major ones, have been completely rebuilt.

Third Class in "Deccan Queen"

Third class coaches are now running in the "Deccan Queen" between Bombay Victoria and Poona. One of these is reserved for season ticket holders between Bombay, Karjat, Lonavla, Kirkee, and Poona. This is the first time that this train has conveyed third class passengers. Hitherto, since its inception before the last war, it has been limited to first and second class only.

NEW SOUTH WALES

Bush Fires Delay Trains

Trains on the line through the Blue Mountains were delayed for periods varying from 25 min. to 4 hr. on December 2, when bush fires crossed the lines. In many sections, signal equipment was burnt out.

UNITED STATES

Rock Island "Talgo" Train

The first American train to be built on the Talgo principle, to the order of the Chicago, Rock Island & Pacific Railroad for its "Peoria Rocket" service, has now been withdrawn from the Chicago-Peoria line and transferred to outer suburban service between Chicago, Blue Island, and Joliet, Illinois. The restaurant accommodation has been removed, and a three-car unit added from the American Car & Foundry Company prototype, bringing the total accommodation of the train up to 500 seats. Automatic machines have been installed for dispensing coffee, cold drinks, sweets and cigarettes. Three round trips are made daily between Chicago and Blue Island and one between Chicago and Joliet, a total of

175 miles. Previously, the daily mileage, with two round trips between Chicago and Peoria, was 646.

Less than 3,000 Steam Locomotives

September returns of the Association of American Railroads showed that for the first time the total of steam locomotives owned by Class I railways in the U.S.A. had dropped below 3,000. The actual number was 2,919, of which 779 were stored in a serviceable condition and 509 were awaiting repair. By comparison, the number of diesel locomotive units had increased to 26,996, with 96 stored and 959 awaiting repair, while electric units totalled 606.

Effect of Pittsburgh Strike

For the second time in three years a strike of Pittsburgh tramway and bus employees in November threw a great deal of extra traffic on to the railways. The Pennsylvania and Baltimore & Ohio Railroads between them put on 22 extra trains daily, and the number of season-ticket holders on the former line rose temporarily to 22,000, against a normal 9,000. Experience of the previous strike, however, was that few of these passengers showed sufficient appreciation of what the railways had done to continue to travel by train after the strike was over.

SPAIN

Six-Wheel Tank Wagons

Five three-axle tank wagons were handed over to the R.E.N.F.E. authorities at the North Station, Madrid, recently. They constitute the first of this type to be placed in service for the Saltra company, for the transport of liquids.

The mounting of the wagons on

three axles allows more useful work to be obtained from the locomotives, as with 15 tonnes tare weight they carry a 32-tonne payload, compared with a 12-tonne tare for 20-tonne payload, for the tank wagons at present in service; thus the length of trains for equal loads is reduced. The wagons are fitted with both hand and vacuum brakes.

Among those present at the handing-over ceremony were Don José Ma García Lomas, Vice-President of R.E.N.F.E., and Senor Puig-Batet, Manager.

SWITZERLAND

New Form of Passenger Timetable

For some time a new form of timetable has been displayed in Zurich Main Station; it has been devised by a senior officer of the Federal Railways.

This timetable indicator is in the form of a vertical cylinder, about 1 m. high, covered with a round sheet of glass. In a recess appear, in luminous projection, the various pages of the official timetable, each page of which has been filmed. In the base there is a specially designed projector, which reproduces on the sheet of polished glass the required part of the film.

To select the part of the film required—in other words the page of the timetable—a large ring is moved by hand. The numbers of the railway lines are seen on a map. The reader indicates this number on the sheet of glass with the aid of a red mark, moved with the aid of the above mentioned ring. Focusing is effected according to the degree of clarity of the inscriptions on the polished glass. A small wheel enables a red ruler to be moved on the screen to underline the printed line which one requires to read.



Three-axle 15-tonne tank wagon incorporating both hand and vacuum brake for the Spanish National Railways

Orange Free State Main Line Doubling, S.A.R.

The longest double line in the Union involving new Vaal River bridge



End-launching of Vaal River Bridge: the nose of the temporarily-continuous superstructure nearing the first pier, propelled by hand-worked geared rollers

THE doubling of the Orange Free State main line is an outstanding railway achievement, and one of the most important projects undertaken by the South African Railways in recent years. No particular engineering difficulties had to be overcome, but the old line had to be straightened and several new bridges had to be provided; in fact, the 229-mile section between Bloemfontein and Kroonstad is the longest double line in any province within the Union of South Africa. Actually, the line is now double all the way from the Eastern Transvaal coal mines through the Rand mining area to Bloemfontein, a distance of 335 miles. The second longest double line in the Union, now being built between Pietermaritzburg and Ladysmith, will be 98 miles shorter than the Orange Free State line.

Other double lines in the Union are between Germiston and Vereeniging (40 miles), Springs-Radfontein (56 miles), Apex-Witbank (70 miles), Cape Town-Wellington (45 miles), and Durban-Cato Ridge (44 miles). It is noteworthy that an amount of nearly £22,000,000 will have been spent on the doubling of lines all over the Union when this programme is completed.

Phenomenal Rise in Traffic

The main reason for the doubling of the Free State main line was the phenomenal rise in traffic following the rapid development of the Orange Free State goldfields; the increasing traffic soon proved to be beyond the capacity of the old single line. The doubling has brought about a saving in length of 5½ miles and, since the introduction of

double-line working, it has been possible to carry an average of 197,000 tons of traffic a month southwards of Kroonstad, an increase of 28 per cent. North of Bloemfontein the increase amounts to 44,000 tons a month, or 11 per cent. The daily average of 97 trains operated between Bloemfontein and Vereeniging before the doubling, has been increased by more than 100 per cent, and the running time between Bloemfontein and Kroonstad has been reduced by nearly

3 hr., from 8 hr. 26 min. to 5 hr. 35 min., and that between Kroonstad and Vereeniging from 5 hr. 14 min. to 3 hr. 35 min.

Fourteen road over- or under-bridges were built to eliminate dangerous level crossings, 10 new river bridges had to be provided, and 10 old river bridges were rebuilt, the largest being that over the Vaal River near Vereeniging, closely followed by the Vet River bridge consisting of seven 80-ft. spans 80 ft. above the river bed.

Vaal River Bridge

The new bridge across the Vaal River near Vereeniging is believed to be one of the few, if not the only bridge in the world which rests on coal. The piers for the steel spans are of concrete, some 46 ft. high above the river bed, where the foundations are taken down about 5 ft. into a deep seam of coal. Large uniform masses of coal such as those in the bed of the Vaal have a surprisingly large load-carrying capacity.

There are three main N-truss deck type spans each measuring 150 ft. between centres of bearings, 17 ft. maximum overall depth and weighing 259 tons, flanked at either end by three 30-ft. semi-circular concrete arches.

Erection Without Falsework

Due to the presence of a barrage some miles downstream there is normally a 20 ft. depth of water at the bridge site, thus the height from normal river level to the underside of the steelwork is about 26 ft.

The spans were therefore designed so that they could be erected on one bank
(Continued on page 746)



New double-track Vet River Bridge, O.F.S.: seven 81-ft. reinforced-concrete deck spans on concrete piers and abutments

New Signalbox at Cannon Street, Southern Region

With the opening on December 15 of a new power signalbox at Cannon Street to replace that destroyed by fire on April 5, full train services have now been restored at this City terminus



Exterior of new Cannon Street signalbox, showing operating room on the upper floor. Below are the relay, battery, mess rooms and so on

ON Sunday, December 15, the new electric power signalbox at Cannon Street, Southern Region, was brought into operation and on the following morning the full normal train service was restored. Twenty-two trains, diverted to other London stations since a fire destroyed on April 5 the signalbox opened in June, 1926, now can use the important terminus again. Some connecting electric trains, run specially while these steam services remained diverted, have been withdrawn.

The fire closed the station for a while, but emergency measures were speedily organised; with the aid of hand signalling, a limited electric train service was run during rush hours, while immediate steps were taken to erect a temporary signalbox and to place orders for the considerable amount of equipment required for a new permanent one.

Former Signalbox

The destroyed box, which stood near the river end of Platform 8, contained a 140-lever power frame fitted with mechanical interlocking; 400 relays of various kinds; and much cabling and wiring. It was opened in connection with the introduction of multiple-aspect colour light signalling in this area and replaced the old Nos. 1 and 2 mechanical-type boxes containing 375 levers.

The original signalbox, spanning the then five lines on the bridge near the platform ends and carrying the home and starting signals on four tall posts above it, in accordance with the practice of those days, was provided by Saxby & Farmer for the opening of the station in 1866. It was fitted with

Walker's block telegraph and eventually his train describers. This box was superseded in 1893 when the approach to the terminus was widened.

All evidence of the exact cause of the fire was obliterated but it seems to have come from a cable fault, leading to severe arcing. It proved possible to obtain a 225-lever power frame from the London Midland Region and construct a 47-lever temporary box, housing 200 relays and requiring several

thousand wiring connections, in what was the staff accommodation of the burned-out one. This was brought into use on May 5 last (see our issue of May 3).

This measure enabled Platforms 1-5, which had been extended at their buffer stop ends, to be used for normal working under full signal protection, and Platform 6 to some extent by 12-car diesel trains, put into service on the Hastings route rather earlier than had been intended. Down trains from this platform could be sent to the through line to London Bridge or the "Metropolitan" line to Waterloo and Charing Cross.

Platforms Lengthened

The lengthening at their (south) river ends of the combined Platforms 5 and 6 to take this size of train made it necessary to abolish a middle siding, used for locomotives, located south of them.

Platforms 7 and 8 also have since been lengthened and certain additional track connections provided to enable long trains to reach the down lines to London Bridge, as their front ends are in advance of the original connections still available for use by shorter train formations.

All these permanent way alterations, with one actually laid in but not used before the fire in connection with the 10- and 12-car trains programme, are now being operated from the new signalbox and are shown in the diagram on page 741 of the complete layout. In 1926, when the destroyed box was



Interior of new signalbox, showing lever frame with signal and point repeater indicators, train describers, illuminated diagrams and other equipment

brought into service, the layout was extensively re-arranged to give better operating facilities.

Routes were then provided from every platform to both down through and down local lines and from the corresponding up lines to every platform, except No. 1, accessible from the up through only.

New Box

It was decided to construct a new signalbox south of the bridge over the Thames in the improved fireproof style which has been used for some time in all new work and embodying the latest improvements.

Within as little as two weeks of the fire, work had begun on clearing the site, where special foundations had to be laid, as the structure had to be built over arches.

It must be emphasised, however, that although the box destroyed by fire was of timber, it successfully withstood serious incendiary and high explosive attacks during the war and did not of itself present any unusual fire risk.

The new one is situated to the east of the curve leading towards Borough Market Junction and contains an operating room, provided with ample windows, in which is a 167-lever frame of Westinghouse "L" type, with electric interlocking, formed from the rest of the frame obtained from the London Midland Region, originally an air raid standby.

The box has the usual visual signal and point repetition indications, standard for some time on the Southern Region lines, and 124 working levers, of which 40 are for points, 48 for running signals, 30 for shunt signals, and six for detonator placers. The 43 spare places left include enough to work Borough Market Junction later on, which will enable the rather old structure there to be dispensed with and give more concentrated and co-ordinated working.

Train Describers and Diagrams

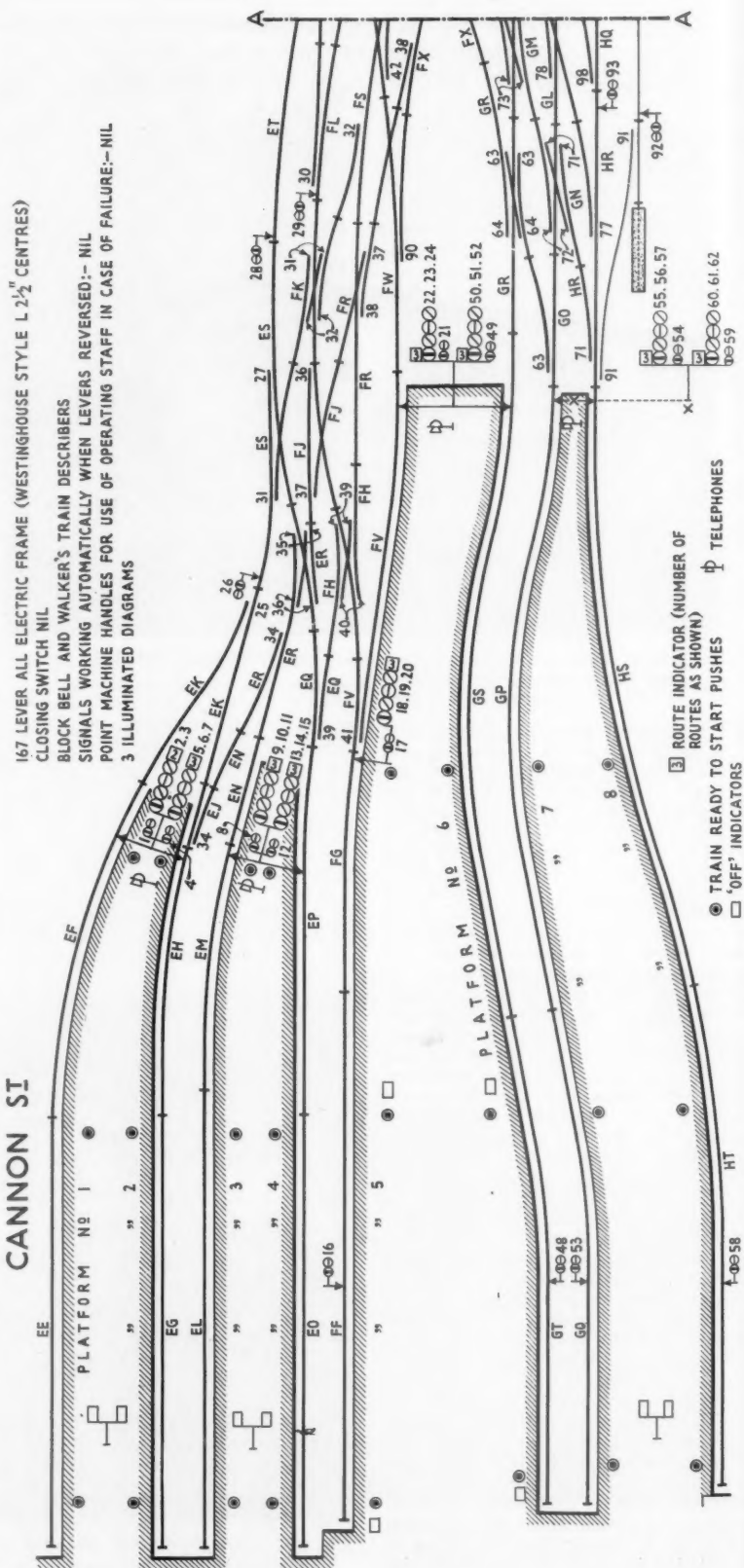
Train describers are in operation to that box and to Metropolitan Junction, which controls the western end of the Borough triangle. Three normally dark illuminated diagrams show the positions of all trains in the area, as seen in the illustrations on page 739.

Relay Room

Below the operating room is a relay room containing 425 relays of various kinds; 23 multi-core cables terminate on the cable panels, most of them having 40 cores each. The fuse panel holds more than 1,000 fuses. The signalling power supply is received at 220 V., 75 cycles and transformed down to 110 V. and 12 V. (for indications).

Points are operated from 130-V. accumulator batteries. A 50-V. battery feeds the route indicators, telephones and other services.

On the ground floor of the box, built of brick by Taylor Woodrow, Limited, to the requirements of the Chief Civil



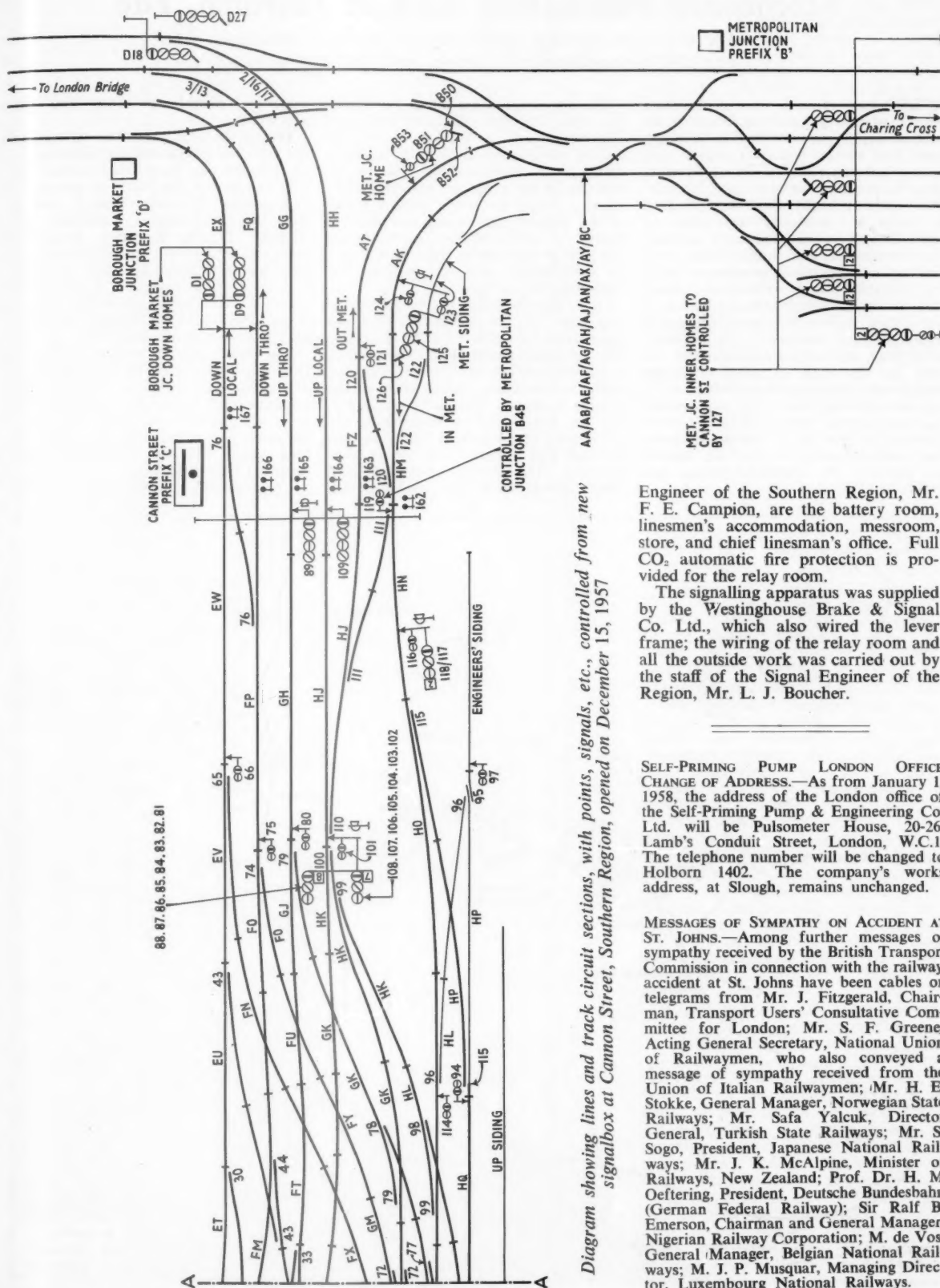


Diagram showing lines and track circuit sections, with points, signals, etc., controlled from new signalbox at Cannon Street, Southern Region, opened on December 15, 1957

Engineer of the Southern Region, Mr. F. E. Campion, are the battery room, linesmen's accommodation, messroom, store, and chief linesman's office. Full CO₂ automatic fire protection is provided for the relay room.

The signalling apparatus was supplied by the Westinghouse Brake & Signal Co. Ltd., which also wired the lever frame; the wiring of the relay room and all the outside work was carried out by the staff of the Signal Engineer of the Region, Mr. L. J. Boucher.

SELF-PRIMING PUMP LONDON OFFICE CHANGE OF ADDRESS.—As from January 1, 1958, the address of the London office of the Self-Priming Pump & Engineering Co. Ltd. will be Pulsometer House, 20-26, Lamb's Conduit Street, London, W.C.1. The telephone number will be changed to Holborn 1402. The company's works address, at Slough, remains unchanged.

MESSAGES OF SYMPATHY ON ACCIDENT AT ST. JOHNS.—Among further messages of sympathy received by the British Transport Commission in connection with the railway accident at St. Johns have been cables or telegrams from Mr. J. Fitzgerald, Chairman, Transport Users' Consultative Committee for London; Mr. S. F. Greene, Acting General Secretary, National Union of Railwaymen, who also conveyed a message of sympathy received from the Union of Italian Railwaymen; Mr. H. E. Stokke, General Manager, Norwegian State Railways; Mr. Safa Yalcuk, Director General, Turkish State Railways; Mr. S. Sogo, President, Japanese National Railways; Mr. J. K. McAlpine, Minister of Railways, New Zealand; Prof. Dr. H. M. Oeftering, President, Deutsche Bundesbahn (German Federal Railway); Sir Ralf B. Emerson, Chairman and General Manager, Nigerian Railway Corporation; M. de Vos, General Manager, Belgian National Railways; M. J. P. Musquar, Managing Director, Luxembourg National Railways.

Mechanised Marshalling Yard at Thornton, Fife

Facilities for sorting 3,000 wagons a day: retarders adjusted automatically to weight and speed of vehicles

THE first of the new mechanised marshalling yards included in the modernisation plan for British Railways went into service just over a year ago near Thornton, an important Scottish Region junction in the east of Fife. The main reasons for the decision to build a completely new yard at Thornton were an expected substantial increase in coal traffic from new sinkings and the modernisation of existing collieries; the reversal in the direction of flow of a substantial amount of the output of the Fife coalfield brought about by the decline of the Lanarkshire field, and increasing demand for coal in the west of Scotland; and recognition that modern construction to take the place of the small, inadequate, and uneconomic yards originally constructed by the North British Railway and scattered throughout Fife, was a pre-requisite to improved train and traffic working.

The site selected, on the down side of the line between Dunfermline and Thornton, and in the centre of the rapidly developing East Fife coalfield, occupies a commanding position in relation to the principal and secondary railway routes traversing Fife, a factor of the utmost importance not only in regard to local traffic characteristics but also in relation to the over-all plan for marshalling yard construction and modernisation in Scotland.

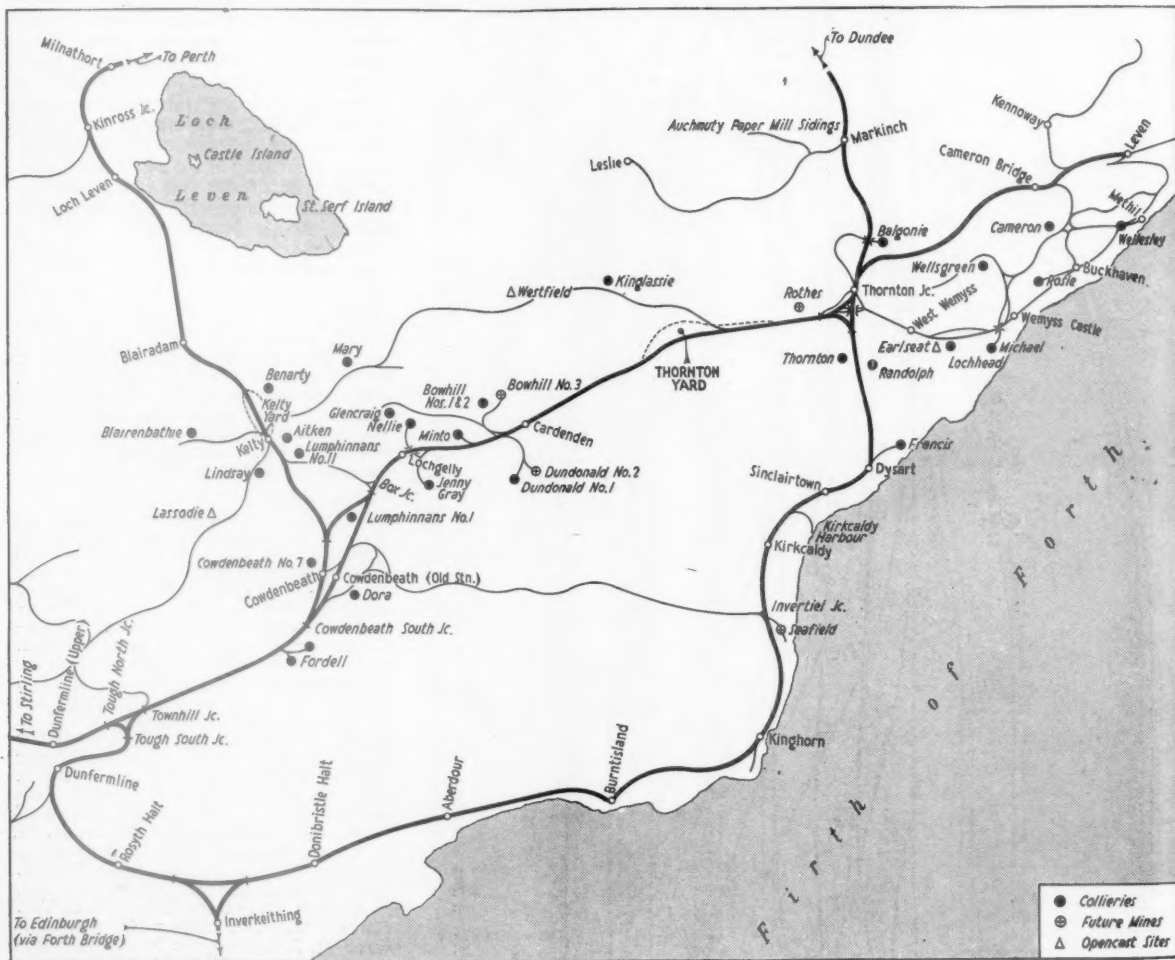
Other factors which played an important part in site selection were the location of the homes of staff, the possibility of mining subsidence, the need to avoid interference with traffic working during construction, the location of the existing Thornton Motive Power Depot, and the desirability of minimising the initial haul of the output from the new collieries and opencast sites under construction. The density, direction, and future development of passenger ser-

vices had also to be taken into consideration.

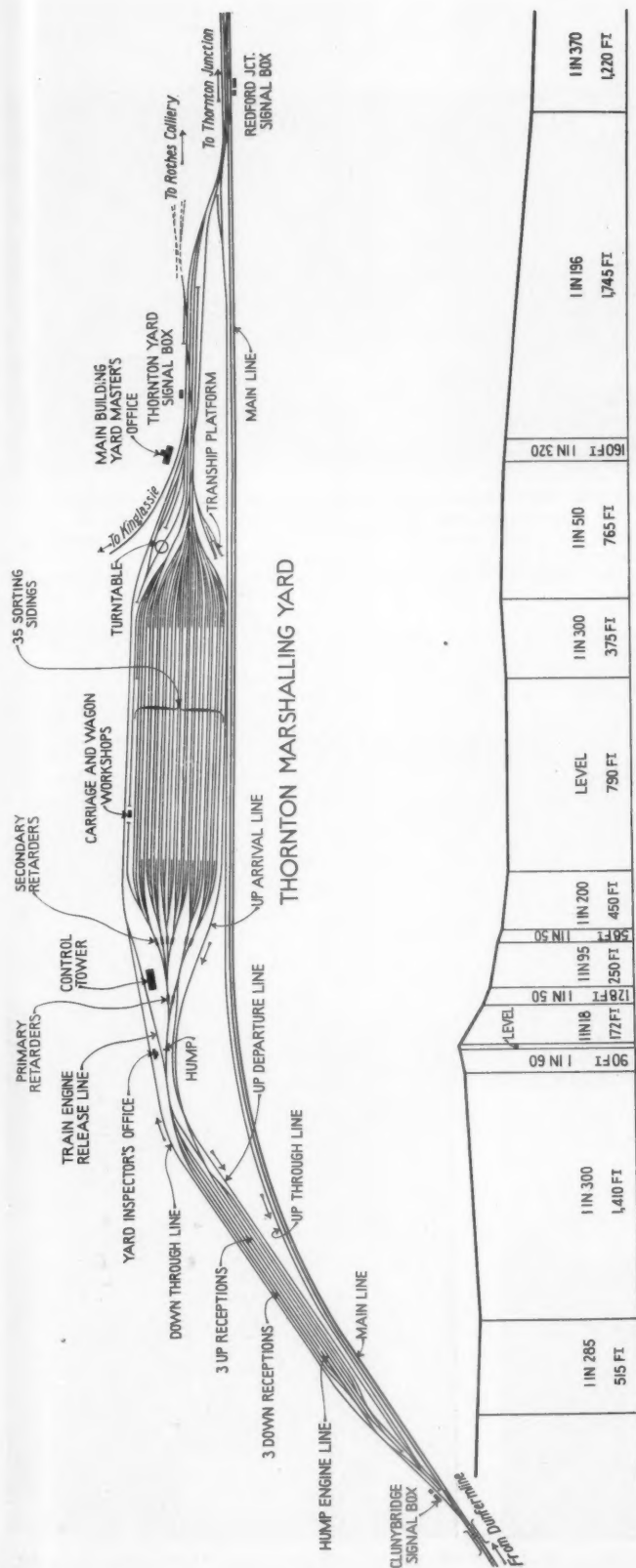
Before the new yard was opened, all the coal and goods traffic originating in, or destined for, East and Central Fife, was handled in six yards or groups of sidings near Thornton Station, and in four at Burntisland, Townhill, and Methil. Double handling, inter-yard working, and other undesirable operating features, resulting from scattered and inadequate facilities, retarded the working. The older yards are still in being, but that at Townhill is being partly converted to other uses.

The new yard, for which 78 acres of land were purchased, is 2½ miles from Thornton Junction, the site of the original yards in this area, and one mile from the motive power depot. Construction proceeded over a period of four years without interference with current traffic working.

Consultation with the National Coal



The position of Thornton yard in relation to mining activities and traffic routes



Layout of Thornton marshalling yard, with up and down reception roads on the left at the west end of the yard and the connection to Rothies colliery at the east.
The gradients adopted are shown below the yard plan

Board and its predecessors in the area enabled a site to be selected which would be relatively free from mining subsidence and yet occupy a central position in the colliery area. The almost completed Rothies Colliery, which eventually will have an annual output of 5,000 tons, is directly connected to the east end of the yard, and the Westfield opencast site—one of the largest in the country—is approached by a four-mile direct mineral line. Other major mining projects are at Bowhill and Seafeld, and in the Methill area nearby. The Westfield site is expected to produce some 5,000 tons a day, and the Seafeld mine a similar amount. Thus, in the next decade, an additional 15,000 tons of coal a day will be mined in the area and a considerable part of this will pass through Thornton Yard.

The main traffic flows from the yard are northwards via the Tay Bridge to Dundee, Aberdeen and so on, and northwards via Perth to points south and north of Inverness, and to Inverness itself. The third flow is westwards to Glasgow and the West of Scotland. At present, the volume of traffic in each flow is roughly equal.

Work on Site

Parliamentary powers for the acquisition of land were obtained in 1948. After the diversion of farm roads the main earthworks contract started in 1953. It involved the movement of 430,000 cu. yd. of material, roughly equally divided between cutting and filling. On completion of this work in May, 1954, a start was made on laying the 26 miles of track.

The construction of buildings, comprising control tower, three signal-boxes, administrative buildings, yard inspectors' offices, staff accommodation, lamprooms, and so on commenced in 1954 and was completed in 1956. All buildings are equipped to the latest welfare standards.

Within the physical limitations of the area available for construction it was decided to lay out and to equip the new yard, which ultimately may be required to handle 3,000 wagons a day, in a manner which would permit the incorporation of a number of new ideas not hitherto adopted in Great Britain nor, so far as is known, in Europe.

It had long been felt by responsible railway operating officers that one of the principal drawbacks of hump yard operation in Great Britain was the incidence of "pushing down" which in some yards was known to reach a figure as high as 28 per cent of the total shift time. To minimise this undesirable feature, eliminate shunters—known as "chasers"—who follow wagons into the sidings to control their running by means of the handbrake, and increase the through-put of the yard, it was decided to construct a hump somewhat higher than normal and to instal primary and secondary retarders instead of following the previous British practice of installing one

set of retarders only. At the time the decision was taken it was known that secondary retarders were in use in America, but in view of the differing conditions there the installation at Thornton was not based on American practice.

It was also decided to experiment in the field of automatic retarder control by measuring the speed and weight of each cut of wagons between the hump and the primary retarders, and again between the primary and secondary retarders, and to relate the recorded information to pre-set retarder leaving speeds.

A further innovation, so far as the Scottish Region was concerned, was that the yard was constructed to deal with up and down traffic in one set of sorting sidings instead of following the hitherto orthodox pattern of providing separate up and down yards. Duplication of buildings and pilot power has thus been avoided, less land and running facilities have been required, and inter-yard movements do not arise.

Layout

The yard, which comprises three down and three up reception lines, a hump engine line, and 35 sorting sidings, runs from west to east with the hump at the west end. Up and down through lines, independent of the main passenger lines, encircle the yard. Train engines are released from the down reception roads through an engine release line on the approach side of the hump. Engines are released from the up reception roads via the signalbox at the west end of the yard. Twelve of the 35 sorting sidings are allocated to west-bound traffic, the remainder normally being used for east-bound traffic. Trains for the west depart by a specially provided up departure line clear of the hump and

the primary retarders although they can also depart in an easterly direction by reason of the location of the yard in relation to the pattern of railway lines in Fife.

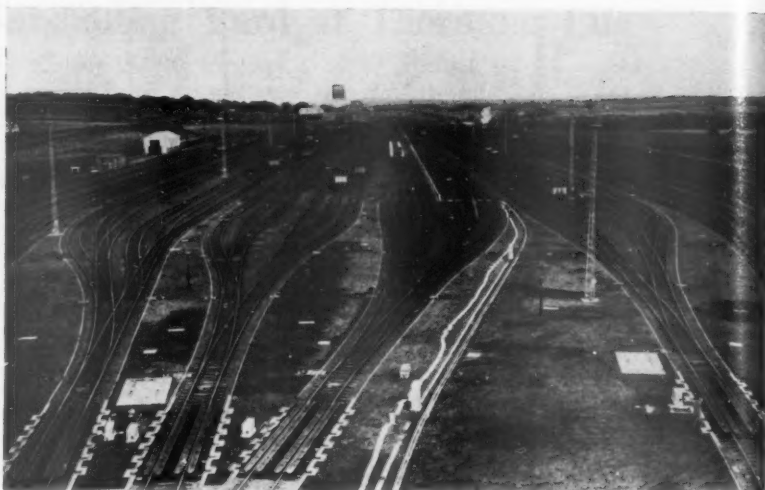
The capacity of the reception lines varies from 55 to 69 with a total stand-age of 375 wagons, and of the sorting sidings from 55 to 78 with a total stand-age of 2,311 wagons. Brakevan sidings, an electrically-operated 70-ft. turntable, wagon repair facilities, a tranship bank and a refuge siding for a Matisa tamping machine form part of the equipment provided. The yard and its connections extend for a distance of 1½ miles.

Trains are examined on the reception roads to discover wagons which may not pass over the hump, wagons

which must not be retarded, and wagons which are damaged to an extent which necessitates attention.

Operation

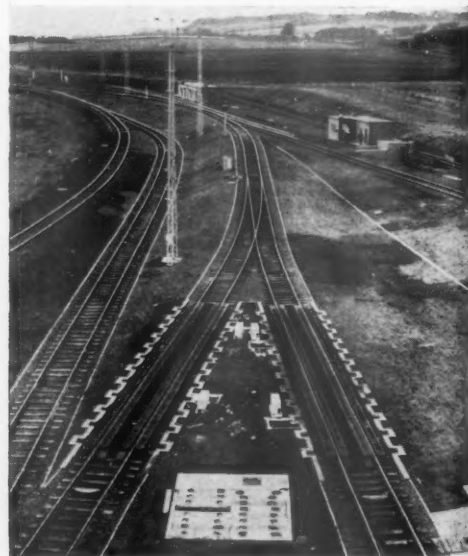
A shunter proceeds along each reception line and makes a list, known as a "cut card," showing the number of wagons in each cut, the sidings to which they will be shunted, and whether any of them must not be humped or retarded. The same shunter uncouples the wagons and then despatches two copies of the cut card through a pneumatic tube to the Hump Inspector's Office. The latter retains one copy, sends the other forward through another pneumatic tube to the control tower, and gives an indication of the order in which each train should be shunted. At



View of yard from west end, showing four of the six secondary retarders and, on the left, the carriage and wagon workshops



Looking east from the hump past the control tower towards Rothes colliery pithead in the distance



Primary retarders with "D"-shaped radar apparatus between the rails in the foreground

present one 350-h.p. diesel shunting engine humps all available traffic during the 24 hr., but two hump engines will be necessary when the target of 3,000 wagons a day is approached.

The reception lines are signalled for shunting purposes by lunar white double-sided position-light signals, 150 yd. apart. These signals display a vertical aspect to indicate "Hump at normal speed," a position at 45 deg. to show "Hump at slow speed," and a horizontal position to mean "Stop." The signals are operated from the control tower with the Hump Inspector having an over-riding emergency control. Each signal applies to two adjacent reception sidings and a wing light indicates to which of them the signal aspect applies. Occupation of all the reception roads is indicated by lights in the control tower and of the down receptions in the controlling main-line signalbox at Clunybridge.

Automatic point setting is in operation. Buttons on the control panel, numbered to correspond with the sorting sidings, are pressed in the sequence shown on the cut list, and up to 48 cuts

light, medium, and heavy wagons. Wagon speeds are measured by means of a v.h.f. signal radiated in a narrow beam from an aerial located in the centre of the track and below each of the retarders. Should the radar system at any retarder fail, a bell warns the operators.

The information obtained in regard to weight and speed is fed into selection circuits so arranged that a heavy wagon entering a retarder at too high a speed will be retarded with high pressure until its speed is only slightly above the pre-selected release speed. The pressure is then reduced and when the correct release speed is reached the retarder is opened. Similarly, a wagon of medium weight will be retarded with medium pressure and a light wagon will be subjected only to low pressure until the required speed value is reached.

All humping movements, departure of train engines from the down reception tracks, arrival and departure of engines and trains for the west, are supervised from the control tower, subject to the over-riding direction of the Hump Yard Inspector, who is located

switches are provided, one for selecting the leaving speed of wagons and the other to either set the retarder to the automatic position or, when working manually, to set the light or heavy setting, or, finally, if no retardation is required at all, to return to the open position. Six leaving speeds can be selected, ranging from 3-8 m.p.h. Wagons are normally allowed to leave the primary retarders at the highest speed to give maximum clearance for following cuts.

At the extreme end of the panel, a series of push buttons is provided by means of which the operator can set up and store 48 individual sortings. This route-setting system enables all points between the crown of the hump and the clearance points of the sorting sidings to operate automatically. The operator can, however, exercise an over-riding control at any time by altering the individual point switches to a new position. Indicators on the panel show the progress of each wagon through the retarders and into the sorting sidings.

Indications on the panel show whether the air pressure is normal or low, and also whether the normal or standby electricity supply is in use. At one end of the panel is the terminal of the pneumatic tube from the Hump Inspector's Office, by means of which the cut cards are received. At each end of the panel a telephone is provided giving communication with all points in the yard, signalboxes, buildings, and so on. The panel is designed for operation by one or two operators.

Loudspeakers and Telephones

Two-way loudspeaker communication is provided between the control tower, the whole of the point area, and the Hump Inspector. Similar equipment exists at the east end of the yard. Local-circuit telephone communication is provided between all key points in the yard, and the whole comes under Burntisland District Control to which it is directly connected by selective control circuits. Closed-circuit television has been installed on an experimental basis in the Yardmaster's Office, situated at the east end of the sidings. Tests show that by this means the yardmaster can have an elevated view of the sorting sidings and hump without leaving his office, a fact which is of material assistance for supervisory purposes. The cameras are mounted on a post at the west end of the yard in the retarder area, one camera facing the hump and the other down the yard towards the east end. They are protected by a metal casing which incorporates visors over the perspex windows through which the cameras "see." The two receivers are normal commercial transportable sets working on a closed circuit on the Channel 1 setting. Each receiver stands on a cabinet which incorporates controls for the cameras some half-a-mile away. By means of these controls the cameras can be focused, panned from side to side, or raised or lowered to show scenes near

(Continued on page 746)



Control desk with route storage buttons on left, point and retarder controls on right, and signal selection controls at front centre

can be stored in the system. The last destination stored can be cancelled, or the whole system cleared, by pressing appropriate buttons provided for the purpose. Should an attempt be made, inadvertently, to register more than 48 cuts, a warning bell rings as the 49th cut is fed in.

Retarders

There are eight retarders, two primary and six secondary, operated by compressed air. They consist of 12-ft. sections which are articulated, the primary retarders being 72-ft. long and the secondary retarders 36-ft. long. Retarder operation is either automatic or manual. Each retarder is equipped with a weight detector, which is located a short distance in advance of the retarder. This weight detector differentiates between

in a building at the crown of the hump. The tower, the working floor of which is elevated, is situated between the primary and secondary retarders. The building is three-storey, the ground floor containing a compressor room, the first floor the relay room, and the second floor the control room. The siting of the control tower was dictated by the position giving the best possible view of the whole yard, with particular reference to the retarder area.

Control Panel

The control panel is mounted on a cabinet 8 ft. long by 2 ft. 3 in. wide. The complete siding layout is depicted and signal and point buttons are superimposed in their geographical positions. The relative positions of the retarders are indicated and with each retarder two

the cameras or in the distance. Apparatus is also provided for changing from short focus to long focus lenses and back again. By proper manipulation of the controls the Yardmaster can obtain a reasonably close-up view of anything happening in the yard.

In designing the lighting installation the aim was to produce an illumination as even as possible over the whole of the area with rather higher levels of illumination in the reception sidings and the hump area. The main sections of the yard are illuminated by 400-W. mercury vapour discharge lamps fitted in enclosed refractor lanterns which incorporate internal reflectors and magnetic arc control. These lanterns are mounted 55 ft. above ground level in groups of two or three on all-welded tubular steel tripole towers.

At selected points the mercury lighting is supplemented by 1-kW. tungsten

filament lamps, in cast silicon aluminium alloy floodlight projectors fitted with single-piece parabolic silvered and lead-backed glass reflector and heavy heat-resisting dome front glass of clear or spreader type, according to the siting of the floodlights. Lighting in the immediate vicinity of the retarders is supplemented by three 1-kW. floodlights mounted on the roof of the control tower.

A modern office for the accommodation of the yardmaster, his clerical staff, train guards, police, and others has been constructed at the east end of the yard in a position which commands full view of the departing trains. The Scottish Region, which has two other large mechanised yards under construction at Millerhill, near Edinburgh, and at Perth, regards the installation at Thornton as one from which much may be learned in the field of marshalling

yard modernisation, and as a distinct step forward in the direction of increased mechanisation.

The main contractor carrying out work to the requirements of the Chief Mechanical & Electrical Engineer, Scottish Region, was Metropolitan-Vickers-GRS Limited, which company was also the main contractor to the Signal Engineer, Scottish Region. The main contractor to the Chief Civil Engineer, Scottish Region, was Whatlings, Limited.

Other contractors or sub-contractors included:—

Retarders ..	Francis Morton & Co. Ltd.
Compressors ..	Broom & Wade Limited
Diesel engines ..	Davey, Paxman & Co. Ltd.; Ruston & Hornsby Limited
Electrical services ..	B. French & Co. Ltd.
Switchgear ..	English Electric Co. Ltd.
Cables ..	Aberdare Cables; British Insulated Callender's Cables Limited
Turntable ..	Cowans, Sheldon & Co. Ltd.

Orange Free State Main Line Doubling S.A.R.

(Concluded from page 738)*

of the river, rigidly connected together end to end, and then end-launched in one piece right across to the other bank without the need for falsework in the deep water.

The decision to adopt this procedure was one of the factors which dictated the use of a separate bridge for each track because the mass of steelwork in each bridge, although very large, would be much more manageable for end-launching than in the case of a double-track superstructure.

Although end-launching is not new, it is believed that the method used for

the Vaal River Bridge is original. For such launching over rollers on the river bank and on the piers and abutments, the usual pulling, pushing (or a combination of both) often results in very indifferent control during the operation. For launching the Vaal River superstructure, the rollers on the Transvaal abutment were connected through trains of toothed gear wheels to manually-operated cranks, so that they could be rotated steadily at will. The leading end of the superstructure resting on the rollers was of sufficient weight to prevent it from skidding, and as the rollers were held in a fixed position on the abutment, the superstructure itself was forced to move forward. Thus, the three spans connected end-to-end

as a continuous span were launched across the river, being picked up in turn by pier rollers and finally by those on the Orange Free State abutment. The use of the geared rollers provided the desired control throughout the complete operation. Speed of launching could be varied and the large structure brought to rest in any required position to within a very small fraction of an inch.

New Stations

The doubling of the line also necessitated the rebuilding of 13 stations, as well as the addition of 19 looplines, 81 interloops and shunting lines, and 32 dead-end sidings at stations between Bloemfontein and Viljoensdrif.

96-lb. rails on steel sleepers were laid and the ruling gradient in both directions is 1 in 100 compensated for curvature; on the Kroonstad-Jordaan and Gunhill-Bosrand sections it is 1 in 90 compensated, and the sharpest curve is 41 ch. rad. Stone ballast was used at the rate of 2,200 cu. yd. a mile.

RAILCAR FACTORY FOR SOUTH AFRICA?—According to Mr. D. H. C. du Plessis, General Manager of South African Railways, who has visited Australia recently, the Commonwealth Engineering Co. Ltd. which builds railcars and rolling stock in Sydney and Perth, is considering opening railway workshops in South Africa.

TRAIN ACCIDENT NEAR BRUSSELS.—An electric express train from Ostend to Brussels ran into the rear of a local steam train on December 16 at Forest, on the outskirts of Brussels. The local train was stationary, apparently as the result of a brake failure while the train was crossing from the fast to a slow line. The first coach of the express was ripped open on one side and passengers fell to the track, four being killed and some 60 injured. It was announced later that a signalman had been arrested. A telegram of condolence has been sent by Sir Brian Robertson, Chairman of the British Transport Commission, to M. Gaston Claeys, President, Belgian National Railways.



Bridge on the Orange Free State main line, showing the 80-ft. high piers

RAILWAY NEWS SECTION

PERSONAL

We deeply regret to record the death on December 18, at the age of 67, of Mr. W. H. Parrack, a director of Tothill Press Limited, the company owning and publishing this journal, and Joint Managing Director of Odhams Press Limited, the parent company.

Mr. Frank Grundy, M.Inst.T., Chief Traffic Manager, North Eastern Region,

Region) in 1954, and Chief Traffic Manager (North Eastern Region) in 1957. During the last war Mr. Grundy's services were lent for a time to the Ministry of Food where he served as an Assistant Director of Transport and Deputy Divisional Food Officer (North West).

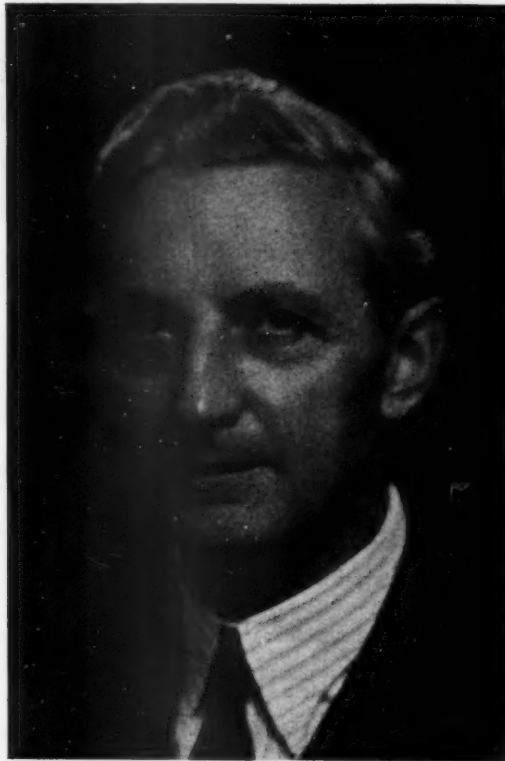
Mr. W. Dunsmuir, M.I.Loco.E., Assistant Motive Power Superintendent, Scottish Region, British Railways, retired on Decem-

to the Motive Power Superintendent, Scottish Region, Glasgow. He became District Motive Power Superintendent, Burntisland, in 1949, and District Motive Power Superintendent, Glasgow (North), a year later, before assuming the position of Assistant Motive Power Superintendent in 1951.

Sir Andrew McCance has been elected to the board of Harland & Wolff Limited in place of the late Sir John Craig.



Mr. Frank Grundy
Appointed Chief Traffic Officer,
B.R. Central Staff



Mr. R. F. Harvey
Chief Operating & Motive Power Officer,
B.R. Central Staff, 1955-57

British Railways, who, as recorded in our December 6 issue, has been appointed to the new position of Chief Traffic Officer, British Railways Central Staff, B.T.C., began his transport career with the Lancashire & Yorkshire Railway at Bury in 1915. He served in the R.N.V.R. from 1917 to 1919, and, after training at stations and district offices, joined the Chief Goods Manager's staff at Euston in 1925. He became Goods Agent at Accrington in 1938, at Bury in 1939 and (after occupying positions at Bolton and Euston) at St. Pancras & Somers Town in 1943. He was appointed Assistant to Chief Commercial Manager (Goods) early in 1944 and District Goods Manager, Wolverhampton in May, 1945. A year later he was made Assistant Chief Commercial Manager (Goods) and, on January 1, 1950, Executive Officer (Goods) at Railway Executive Headquarters, in which capacity he had acted for nearly a year. He became Assistant Commercial Superintendent (Western Region) in 1950, Commercial Superintendent (North Eastern

Region) in 1954, and Chief Traffic Manager (North Eastern Region) in 1957. During the last war Mr. Grundy's services were lent for a time to the Ministry of Food where he served as an Assistant Director of Transport and Deputy Divisional Food Officer (North West).

Mr. Dunsmuir joined the Locomotive Department of the Caledonian Railway in 1907 at Polmadie and received his technical training there and at St. Rollox Works and Glasgow Technical College. In 1929 he became Head Office Inspector (Motive Power), London Midland & Scottish Railway (Northern Division), Glasgow, and, in 1933, went to Carlisle (Kingmoor) as Foreman Fitter. There he occupied temporarily the position of Assistant to the District Locomotive Superintendent at Durranshill. In 1938 he became District Locomotive Foreman at Aberdeen and, the following year, District Locomotive Superintendent, Inverness (also in charge of the Chief Mechanical Engineer's Carriage & Wagon, and Road Motor Departments for the Inverness area). In 1943 he was appointed District Locomotive Superintendent, Perth, and two years later, Assistant (Motive Power Maintenance) to Operating Manager, Glasgow. On nationalisation, Mr. Dunsmuir was appointed Assistant (Maintenance)

Mr. R. F. Harvey, M.B.E., M.I.Mech.E., M.I.Loco.E., Chief Operating & Motive Power Officer, British Railways Central Staff, B.T.C., who, as recorded in our December 6 issue is retiring in the New Year for reasons of ill-health, has served the railways for nearly 50 years. He was born at Louth, Lincs, in 1893, and educated at Watford and Derby Technical College. He joined the Midland Railway in 1908 at Derby Locomotive Works, and became Assistant to the District Locomotive Superintendents at Leeds and Kentish Town in 1914 and 1915 respectively. After service in the Royal Navy from 1915 to 1919 he returned to Kentish Town as Assistant District Locomotive Superintendent. He was appointed District Locomotive Superintendent at Worcester in 1922, at Burton-on-Trent in 1923, at Rugby in 1927, and at Liverpool, Edge Hill, in 1932. In January, 1934, he became Assistant Divisional Superintendent of Motive Power at Manchester, and in October, Assistant to the Superintendent of Motive Power, L.M.S.R.,



Mr. Eilif I. Froshaug

Manager, Norwegian State Railways Travel Bureau, who is retiring



Mr. W. R. Headley

Appointed Architect, L. M. Region, British Railways



Mr. C. P. Millard

Appointed Assistant Divisional Traffic Manager, Manchester, L. M. Region

Euston. He was transferred to Glasgow as Assistant Operating Manager (Scotland) in 1939 and became Motive Power Superintendent, Scottish Region of British Railways in 1948. For services rendered during the war he was made an M.B.E. in 1943. Mr. Harvey became Chief Officer (Motive Power), Railway Executive, in 1950 and was appointed to his present position on January 1, 1955.

Mr. C. S. Lock, Press Officer to the British Transport Commission, is retiring at the end of this month after 36 years of service.

Mr. Eilif I. Froshaug, Manager of the Norwegian State Railways Travel Bureau in London and doyen of the official representatives in the United Kingdom of all foreign tourist countries, is retiring. Mr. Froshaug, who was born on December 6, 1887, in Fredrikstad, Norway, began his career with the Norwegian State Railways in 1906. After training and station experience he served in the Publicity Department and Travel Bureau and later as an instructor in the Railway School. In 1912 he became the railways' travel representative in the United Kingdom, taking up his appointment in the Norwegian Travel Bureau, then at 179, Strand, W.C.2, in January, 1913. This office, then recently established in conjunction with the Great Northern Railway, dealt generally with Norway's travel interests. It acted for the Norway Travel Association, the North Sea steamer routes, Norwegian transport companies, and hotels, etc. An important aspect of Mr. Froshaug's duties was the establishment of personal contact and the maintenance of friendly co-operation with British travel agents. The Bureau kept open throughout the 1914-18 war, when it proved of value to Allied transport. The present Norway House at 21-24, Cockspur Street, in which the Bureau is now situated, was acquired and completed in 1920, since which year Mr. Froshaug has been in charge with the exception of the years 1926-28, when he was granted leave of absence for the purpose of reorganising the Bennetts Travel Bureau in Oslo with its many branch offices in Norway and abroad. During the 1939-45 war Norway House was handed over to the Norwegian Government in London and used

for military purposes. Mr. Froshaug was put in charge of the Norwegian Registration & Employment Offices and the Norwegian Refugees Organisation. He was appointed a member of the board of the Norwegian Military Forces and played an active part in the Norwegian Red Cross organisation for which he was awarded their highest distinction. When peace was declared he returned to his offices in Norway House. In 1947, on the appointment of Mr. P. Prag as London Manager for the Norway Travel Association, Mr. Froshaug was relieved of his duties for the Association. Mr. Froshaug holds the Order of St. Olav 1st Class.

Mr. W. R. Headley, who, as recorded in our November 22 issue, has been appointed Architect, London Midland Region, British Railways, began his architectural career in the office of Sir John Brown & A. E. Henson, London, afterwards joining the staff of Dyneley Luker & Moore of Lincoln's Inn Fields. During the last war he served with the R.A.F., later studying at the Architectural Association, London, for three years. On qualifying, Mr. Headley joined the staff of the Great Western Railway in November, 1947. In July, 1949, he was appointed Principal Assistant Architect to the Western Region at the age of 27 and six years later, became Principal Assistant Architect, London Midland Region.

Mr. C. P. Millard, District Goods Manager, Warrington, London Midland Region, British Railways, who, as recorded in our November 22 issue, has been appointed Assistant Divisional Traffic Manager, Manchester, joined the former London & North Eastern Railway in February, 1934, as a probationary clerk. After gaining experience at various stations in the London area he was selected in 1937 for training as a traffic apprentice. He underwent training at various stations and district and headquarters offices in Scotland until January 1, 1940, when he joined H.M. Forces. He was commissioned and served throughout the war in the Royal Engineers (Movement Control). In 1946, after a few months in the District Operating Superintendent's office at Norwich, Mr. Millard became Assistant to the District Goods & Passenger Manager, Peterborough, in which capacity he served

until 1948 when he became Goods Agent, Chelmsford. In 1951 he took up a similar position at Portsmouth & Southsea, in 1954 was appointed Assistant District Commercial Manager, Nottingham-Derby District and, in 1956, became District Goods Manager, Warrington.

We regret to record the death in Buenos Aires, of Eng. Adolfo Kirkerup, former Administrator General of the General Urquiza and General Belgrano Railways, Argentina.

The Tilling Group announces that Mr. D. A. Crew, Assistant Traffic Manager of the United Counties Omnibus Co. Ltd., has been appointed Traffic Manager of that company in succession to Mr. R. G. Howe, who was recently appointed Director & General Manager of the Southern Vectis Omnibus Co. Ltd.

The London Midland Region of British Railways announces the following appointments:—

Mr. A. S. Gillett to be Diesel Assistant to Motive Power Superintendent, Euston.

Mr. H. V. Standen to be Assistant (Signals), Signal Engineer's Office, Euston.

Mr. H. E. Evans to be Assistant District Engineer (Permanent Way), Walsall.

Mr. D. J. Lees to be Assistant to District Engineer (Work Study & Planning), Derby (South).

Mr. N. C. Lake has been appointed a director and Deputy Managing Director of Head Wrightson & Co. Ltd. He will be responsible for the co-ordination of the group sales to the iron and steel industry. Mr. Lake was formerly Managing Director of Head Wrightson Machine Co. Ltd. Mr. Douglas Dodds-Parker has joined the board of the Head Wrightson Export Co. Ltd.

Mr. H. B. Lloyd, Technical Services Superintendent for the Workington Iron & Steel Co. Ltd., a branch of the United Steel Companies Limited, has left the company to take up another appointment. He will be succeeded on January 1 by Mr. D. R. G. Davies, now Chief Chemist & Control Metallurgist. Mr. L. Jackson will succeed Mr. Davies as Chief Chemist.

Hale & Hale (Tipton) Limited

Efforts to combat rising costs

The 21st annual general meeting of Hale & Hale (Tipton), Limited, was held on December 18 at Dudley, Mr. R. C. Leppington (Vice-Chairman & Managing Director) presiding in the unavoidable absence of the Chairman, Mr. W. Edgar Hale, M.I.Mech.E.

The following is an extract from the Chairman's circulated statement:

The consolidated trading profit for the year amounts to £101,287, which figure compares with £118,960 for the previous year and shows a decrease of £17,673. After various adjustments there is a profit before taxation of £53,568 as compared with £75,113, a decrease of £21,545 in this profit.

Taxation requires £29,905, and, after adjusting for excess provisions in respect of earlier years of £8,256, there remains a consolidated net profit of £31,919, which shows a decrease of £6,156 on last year's comparable figure.

Production and Sales

This has been a somewhat difficult year from the trading point of view, due in the early stages to the fall-off in the car industry, followed by the Suez crisis, which also appreciably effected the light and heavy commercial vehicle industry, agricultural machinery makers, and many other trades with which we are associated.

In conjunction with these trading set-backs we have been faced with substantial increases in raw materials, fuel, and freights from the nationalised industries, together with increased costs.

The price margin between production cost and selling price is an ever-decreasing one, as, unlike the nationalised industries we have great difficulty in recouping; indeed we are unable to recover the full cost of these advances from our customers.

Our programme of modernisation and improvement, however, still goes forward, as this is obviously the only way we can seriously combat rising prices and maintain our own costs at a reasonable level.

Production is now getting back to normal level and should steadily increase, provided there are no further set-backs waiting round the corner.

Subsidiaries

Chatwins, Limited. The year has been incomparably the most difficult one experienced in recent times both as regards Solid Fuel Appliances and Oil Heaters. Despite the adverse conditions we were able to obtain a large proportion of the available market in solid fuel goods.

As regards the solid fuel side, we have a favourable order book, although the oil heater position has not yet got under way.

J. & J. Whitehouse (Tipton), Limited. The year's trading compares very favourably with the previous year, whilst the order book is quite healthy.

Hale Enamellers, Limited. Due to the recession in the solid fuel industry, the output was somewhat reduced, but at present full production is being maintained.

J. Wakefield & Sons, Limited. We acquired this small company in December last, and should later prove beneficial to Chatwins, Limited, in their manufacture.

As to future prospects, I do not think there has been a more difficult period for many years now in which to prophesy what the future holds in store for industry as a whole, and more particularly for those sections of industry which are engaged in

iron and steel. The time has arrived in the ingot steel industry when there is comparatively little backlog on order books to be pulled up. In fact, one must incline to the view that production is already exceeding demand, and this prospect directs one's mind to the extremely important part that increased exports will play in this connection.

The report was adopted.

Chairman's Message to B.T.C. Staff

Sir Brian Robertson, Chairman of the British Transport Commission, issued the following Christmas and New Year message to members of the staff throughout the Commission undertaking:—

"This year my message to the staff goes out at a time of anxiety about many things.

"But this is a season for good cheer, when people lay their anxieties aside for a while, celebrate the Christian festival of Christmas, welcome in a New Year, and have a good time. Transport, by road and rail, is in much demand, and those who serve in this great organisation must work harder than ever to enable others to enjoy themselves.

"It is a very good opportunity for us to earn the goodwill of the public by carrying them, their luggage, their goods, in our trains, buses, tubes, lorries, ships and barges, smoothly, efficiently, and courteously, in spite of the rush of seasonal traffic. We need this goodwill. Please do your best to earn it.

"Nineteen-fifty-eight is likely to be a testing year for our country and its economy. It will also be a year of testing for us. There is nothing to worry about if we pull together, but plenty to worry about if we don't.

"I hope that, in spite of the extra work,

you will manage to enjoy your Christmas, and your families with you. I send you all the best of wishes for 1958. I ask you, one and all, to back up your own show by giving it your full effort and loyalty in the year ahead."

SOCIETY OF BRITISH PAINT MANUFACTURERS LIMITED.—At the annual meeting of the Society of British Paint Manufacturers Limited on November 12, Mr. C. D. O'Sullivan, the President, stated that the P.M.C.C. was extending its activities. It has taken over responsibility for the Industry Costing Committee, and has recommended the establishment of an Industrial Surface Coating Advisory Council. It has also set up a study group to consider technical education in general and with special reference to the industry. He thought there was room for increasing some aspects of publicity, and a scheme was being considered.

RUSSIAN DELEGATION VISITS METRO-CAMMELL.—Members of the Soviet Delegation invited to this country by the British Transport Commission visited the Midland and Saltaire Works of the Metropolitan-Cammell Carriage & Wagon Co. Ltd. on December 5. The party was made up of Mr. Beshchev, Minister of Railways of the U.S.S.R., leader of delegation; Mr. Voronichev, Mechanical Engineer; Mr. Simonov, Deputy Chief, Technical Council; Mr. Naumov, Chief Civil Engineer; and Mr. Mordvinkin, Chief Engineer, Ministry of Railways. During their tour the delegation saw a wide range of rolling stock under construction, including coaches for electrified railways in South Africa and Brazil as well as diesel railcars and other passenger vehicles for British Railways. The delegation also saw various types of wagons being built for home and overseas railways. The photograph shows Mr. Beshchev in the centre of the group with Mr. H. N. Edwards, Managing Director of Metro-Cammell, on his left answering a question asked by the Minister.



Members of the Russian delegation during their tour of the Metropolitan-Cammell Carriage & Wagon Co. Ltd. works

NEW EQUIPMENT AND PROCESSES

Fully-Insulated Welding Electrode Holder

TWO electrode holders, smaller than a previous design, are now being produced. These are the Lincoln-Jackson models A.W. and J.H.2.

Both electrode holders have crown channel type jaws of 98 per cent copper alloy, and are thoroughly insulated, with full protection from accidental arcing. The jaws have fibre-glass reinforced plastic insulators for greater heat resistance and durability, with specially designed handles to give greater ventilation and operator comfort.

Type A.W. is a medium class holder which will operate at up to and including 300 A. With a weight of 14 oz. it is stated to be one of the lightest holders made to take $\frac{1}{4}$ -in. electrodes. It has a length of $9\frac{1}{2}$ in.

The J.H.2 holder, which is illustrated, is rated to operate at up to 200 A. and will handle $\frac{3}{8}$ -in. electrodes. It has a weight of only $9\frac{1}{2}$ oz., is 8 in. long, and is of smooth construction. The manufacturer believes it to be very suitable for work in difficult places and for reducing operator fatigue.

Lincoln-Jackson holders are manufactured by the Lincoln Electric Co. Ltd., Welwyn Garden City, Herts.



are claimed to allow easy manoeuvrability. Main particulars of the equipment include weight, without undergear, 19 cwt.; dimensions, without undergear, 50 in. \times 27 in. \times 50 in. high; N.E.M.A. rating, 300 A. d.c., at 40 arc V., 60 per cent duty cycle. The generator, constructed to B.S. 638: 1954 throughout, is stated to have rapid voltage recovery, and be self-stabilising with drooping characteristic. Field excitation of the welding generator is obtained from a separate belt-driven generator of standard manufacture as used on many commercial vehicles; a tensioner prevents slipping.

The welding generator is flange-coupled to a Ford four-cylinder water-cooled industrial diesel engine, fitted with electric starting; a heavy flywheel ensures satisfactory emergency hand-starting. Also fitted are an 8-gal. fuel tank and water-circulating system with thermostatic control. The engine is rated at 40 b.h.p.

A feature of the set is the fully automatic idling device. Pneumatically operated, it is arranged to reduce the engine to idling speed automatically when welding is not in progress; no switch or other control on the electrode holder is necessary. A pre-set adjustable time delay prevents the engine idling during pauses in welding, such as would be encountered when electrodes are changed. The engine rapidly reaches full speed upon the commencement of welding following a period of idling. This device is capable of giving a worthwhile reduction in fuel consumption, especially during site welding under difficult conditions, where frequent interruptions of the arc are necessary; engine wear is also reduced.

The controls of the set are arranged, not only for simplicity and safety, but also to give the operator the choice of a large number of volt/ampere characteristics, so that he can adjust the welding conditions as required.

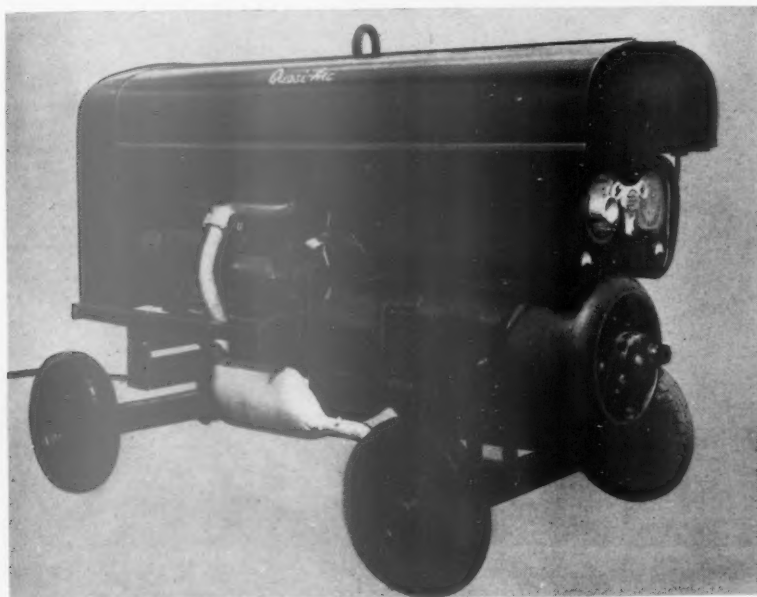
In standard form the equipment is mounted on a four-wheel pneumatically-tired undergear for hand towing; the two front wheels are steerable and attached to a draw-bar. It can, however, also be supplied mounted on brackets for stationary use, or on a two- or four-wheeled road-towing undergear. The engine and generator are covered by a weatherproof sheet-steel housing, and a large capacity tool and accessory cubicle is incorporated.

Further details can be obtained from the manufacturer, Quasi-Arc Limited, Bilston, Staffs.

Welding Set for Remote Sites

THE Type DEB400U diesel engine-driven arc welding set is an addition to the manufacturer's range of similar equipment. It can be used for all general purpose welding on remote sites away from workshops. Continuous welding currents of up to 300 A. and intermittent of up to 400 A. are provided by this set.

The machine is of robust construction but its light weight and relatively small size



Thermocouple Wire

A FORM of thermocouple wire, now being marketed, has been designed for measuring a wide range of temperatures under extreme conditions. It is suitable for the surface and working temperature measurement of all kinds of heat-treated materials, of furnaces, working machine parts and so on. There are also likely to be other situations where an alternative temperature-measurement method would be impracticable.

Four different types are available for temperatures ranging from -200°C . up to $+1000^{\circ}\text{C}$. with ceramic-packed single

or double core in metal sheathing. Diameters vary between 0.5 mm. and 1 mm. according to type. The wire can be bent to a curve having only five times the wire diameter and into any configuration without risk of earthing or shorting the cores. It has a low heat capacitance at the hot junction and therefore, it is claimed, a high response sensitivity.

The wire is suitable for high-pressure working conditions, and requires no additional insulation. Installation is simple and it is stated to be ideal for multi-point measurement where space is limited.

Full details may be obtained on application to the distributor, Philips Electrical Limited, Century House, Shaftesbury Avenue, London, W.C.2.

Lightweight Soldering Iron

THE No. 92 soldering iron is a lightweight model, stated to be of a new design. It has been developed to meet the requirements of continuous small assembly and instrument work, and appears suitable for use on telecommunication and other intricate electrical equipment.

The element is wound on a flat mica strip and folded with an interposing mica insulating piece. It is then encased in mica and enclosed within a rectangular section steel casing.

The dull, nickel-plated copper bit is replaceable, being secured to the barrel by means of a special locking nut. A split moulded handle is incorporated, with all terminals accessible. The cable and sleeve are clamped into position and an earth symbol, permanently marked, conforms to various international regulations. Slots are provided in the chromium-plated barrel to ensure that the temperature of the handle is maintained within comfortable limits.

Other features of the iron are rapid heat-up and constant working temperature.

It has a consumption of 25 W., and weighs 3 oz. It can be supplied for voltages of 25, 50, 100-110, 115-130, 150-160, 200-220, and 225-250.

The No. 92 soldering iron costs 22s. 6d. Further details, including delivery can be obtained from the manufacturer, Wolf Electric Tools Limited, Pioneer Works, Hanger Lane, London, W.5.

Hydraulic Arbor Nut

THE Euco hydraulic arbor nut has been designed to eliminate the method frequently used in tightening up an arbor assembly carrying one or more cutters by using a spanner on the arbor nut. It is necessary to use a heavy hammer both to tighten and loosen the nut which is a bad practice.

The hydraulic nut enables a pressure of 20 to 40 tons to be applied with finger control. The original arbor nut is discarded and the hydraulic nut is screwed on by hand, clamping pressure then being applied by turning an Allen key. Removal of the nut is accomplished with equal facility, spanners and hammers being no longer required.

The nut consists of a body which is bored to provide a chamber with a small diameter opening into a larger diameter. This is filled with a special hydraulic grease which is contained by fitting cup-shaped composition seals.

The smaller diameter of the chamber is screwed to take a $\frac{1}{4}$ -in. Allen screw fitted with a $\frac{1}{4}$ -in. dia. steel ball. The ball



locates on a steel thrust pad which bears on the flat face of the small rubber seal. Pressure is transmitted through the chamber to the large rubber seal and thrust pad; thence through six $\frac{1}{4}$ -in. dia. hard steel plungers located in a cage which is screwed into the larger diameter of the chamber. The bore of this cage is also screwed to fit the machine arbor. A cover plate fits over the chamber and transmits the pressure from the plungers to the machine arbor.

The nut can be supplied for any machine which has the arbor nut outside the arbor support.

Prices of Euco hydraulic nuts for standard arbors are: $\frac{1}{2}$, $\frac{3}{4}$, and 1 in., 150s.; $1\frac{1}{2}$ in., 165s.; $1\frac{3}{4}$ in., 185s. Other details can be provided by Euco Tools Limited, 44, London Road, Kingston, Surrey.

Refractory Protective Coatings

THE introduction of a new range of furnace refractory protective coatings is made with the name of Coltrate R.P.C.

There are various types of the product to deal with varying conditions. They are all supplied in the form of a dry powder, which for use is mixed with water to a thick creamy paste and applied by brushing, spraying or trowelling. The coating thickness is from $\frac{1}{16}$ to $\frac{1}{4}$ in. After application, the furnace is fired and the temperature steadily increased up to the point where vitrification is reached.

The coating, after fusing, remains as a continuous, monolithic lining that prevents cracking of the underlying refractories. It penetrates and seals the pores of the refractories, and forms a barrier to gases and particles; it also acts as a

binder for any loose cracked portions.

As the coating gives a gas-tight seal, its use is stated to result in fuel savings, higher efficiency and less frequent relining. The coating resists slagging and is not readily wetted by slag.

The range of Coltrate R.P.C. (glazed types) covers the following temperature ranges:—"Loglaze 1521," 1,500° to 2,100° F.; "Midglaze 1823," 1,800° to 2,300° F.; "Higglaze 2230," 2,200° to 3,000° F.

A non-vitreous type, Nonvit, is also available. This covers the complete temperature range from 50° to 3,500° F. A refractory mortar for bonding, patching and plugging, designed to be effective over the temperature range up to 3,000° F., is another product being manufactured.

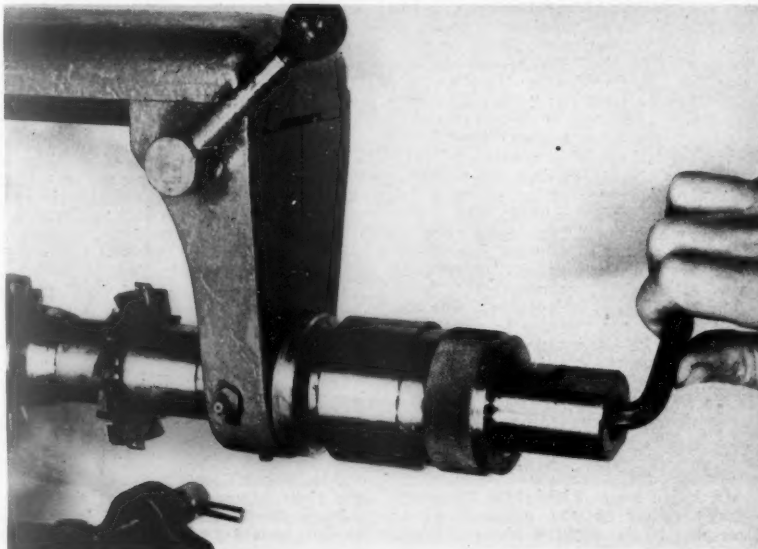
The refractory protective coatings are being manufactured by Coltrate Limited, New Broad Street House, 35, New Broad Street, London, E.C.2.

Reinforced Paper

A REINFORCED kraft paper, Scrimtex, which is stated to represent a new development in paper manufacturing, is now available in this country. Its strength can be increased by incorporation of a glass fibre or rayon scrim, which becomes an integral part of the paper. This results in a high tear resistance, and stops a tear from spreading beyond the mesh of scrim.

Apart from packaging applications, Scrimtex can be used in place of tarpaulins. It has also been used in the U.S.A. for railway goods vehicle retainer doors.

Full details can be obtained from William Palfrey Limited, Palfrey House, 24, City Road, London, E.C.1.



Questions in Parliament

Use of Swiss Locomotive

In the House of Lords on December 17, Lord Forbes asked why a train journey by the Canadian trade delegation in Britain was made in the Western Region behind a gas-turbine locomotive.

Lord Mancroft, Minister of State, said in reply that on one occasion only was a locomotive of other than British manufacture used. The Swiss locomotive was experimental and was the most modern normally available on the Western Region. All other journeys for the delegation were made with British rolling stock, and included the use of the prototype British diesel-electric Deltic locomotive, and a diesel railcar.

Parliamentary Notes

Foxfield-Coniston Branch

Sir Ian Fraser (Morecambe & Lonsdale—C.), in a late-night adjournment debate in the House of Commons raised the question of the closing of the railway branch line between Foxfield and Coniston. The case had been put to the Transport Users' Consultative Committee, and he understood that as a result the decision had been delayed for a few weeks. This railway had existed for 99 years, and served one of the most beautiful parts of the Lake District. If the railway were taken away—although he insisted that it should be maintained as a public service even if it did not pay—the roads were inadequate to provide for alternative traffic. It would cost perhaps £40,000 to £80,000 to put on a much better road service.

In the absence of the Member for Westmorland (Mr. Vane), Sir Ian Fraser, on his behalf, put in a plea against the proposed closing on Sundays in the winter months of the line between Oxenholme and Windermere.

Mr. G. R. H. Nugent, Joint Parliamentary Secretary, Minister of Transport & Civil Aviation, stated that the B.T.C. had a formidable task ahead to achieve solvency, and it was its hope and intention to do so under its modernisation plan by 1961-62. But it was clear that if the B.T.C. were to give the nation the modern services needed at fully competitive rates without recourse to the taxpayer, it had no alternative but to close unprofitable lines. The alternative would be to carry them either on the back of the taxpayer or at the expense of other travellers.

Mr. Nugent went on: "No railwayman would ever be willing to close a line if he could possibly keep it open. The B.T.C. is very conscious of the value of these rural lines as feeder lines to the main lines, and is prepared to carry a fair amount of unprofitable traffic in that way. It has gone to much experiment to try to cheapen the costs of running these lines." Whatever was done, some of them were bound to be really uneconomical.

The N.W. Area Consultative Committee had taken proper steps to see that those who would be interested or affected had a chance to ventilate their grievance. The B.T.C. had previously arranged with the Ribbles Motor Services Limited to run its bus service to replace the line if it were to close.

Transport Users' Consultative Committees

Mr. Julian Snow (Lichfield & Tamworth—Lab.) raised on the adjournment on December 10 the question of the transport

users' consultative committees which were established originally under the 1947 Transport Act. He was, he stated, beginning to wonder whether, in the light of experience, the role of the consultative committees, both central and area, should not be changed from one acting as an advisory body to the Minister and the Commission to one acting as watchdog on behalf of the users. It seemed to him that their activities were concentrated on the industrial and commercial aspects of transport and, to a much lesser degree, were devoted to the interests of the passengers. There seemed to be a widespread view that the area committees were somewhat ineffectual and very remote.

It would be wrong continually to criticise British Railways for the quality of their service and for their efforts to improve them. "It is fashionable," he added, "to cite in support of criticism what is done on the Continent, notably in France. Whereas I have great admiration for the French State railway system and other nationalised systems, nevertheless, the figures which were published a few years ago about the new rolling stock put on the railways of this country by the B.T.C. show that we have made an effort which is second to none in Europe."

He thought it would be a good thing if the Minister would draw to the attention of the area committees and the Central Committee the need to keep in somewhat closer touch with Members of Parliament.

Passengers' complaints largely related to unpunctuality of trains and amenities for the public. . . . The Central Committee had made reference to the former in its reports for 1955 and 1956. The British public was entitled to see some analysis of punctuality for main lines and local services. Could not the travelling public be given a service of information over the loudspeaker systems in stations?

Mr. G. R. H. Nugent, Joint Parliamentary Secretary to the Ministry of Transport & Civil Aviation, said that the committees were advisory and were the safeguard to ensure that the Commission response to consumer needs was adequate in a general way. While they wanted area committees to be in touch with all transport users, care must be taken to avoid burdening them with too much. Care must also be taken to see that by any arrangement which was made to improve their contact with the general public they were, in fact, independent of the Commission.

The Central Committee had made a study of the question of unpunctuality, and there was reference to the causes of this in its 1956 report. The Commission made quarterly returns on unpunctuality, and *The Railway Magazine* had a monthly record of main-line cases of it. The information was there for anyone to buy. As to bad time-keeping, the 1956 report made it clear that this was largely due to old fashioned and out-of-date equipment, and also, of course, to something quite the reverse—the modernisation work now going on. The shortage of signalmen was rapidly being overcome by the system of colour-light signalling. In some cases, it was a problem to find jobs for men who had become surplus.

As to the suggestion about changing the functions of the consultative committees from an advisory one, he thought it would be impossible to do that with the present structure and personnel. "I feel," commented Mr. Nugent, "that we have about the right balance there, that these committees should be the watchdogs of the services provided by the B.T.C. rather than

the watchdogs of the efficiency of the Commission itself." He thought the consultative committees, if required to perform their useful function in a more precise fashion, would have to be altered in membership and structure. He did not think they could be replaced with something which could do the job better.

Staff and Labour Matters

Manning of Diesel and Electric Locomotives

Final agreement was reported to have been reached last week between representatives of the B.T.C. and the A.S.L.E.F. and N.U.R. on the manning of diesel and electric locomotives and multiple-unit trains.

The decisions were reached in a joint sub-committee. Details are being considered, as we went to press, by the Commission and the executives of the two unions concerned. They are understood to lay down the distances over which a single driver may work, where he shall be relieved, the circumstances in which two men shall work together on long-distance services, and similar provisions.

Opening of Great Eastern House, Cambridge

The new headquarters building of the Traffic Manager, Cambridge, on the Great Eastern Line of the Eastern Region of British Railways, was opened on December 18 by Sir Hamilton Kerr, M.P. for Cambridge City.

Sir Hamilton Kerr, at a luncheon at the University Arms Hotel, before the ceremony, expressed his pleasure at the vigorous measures being taken by the Region to win, and the better to handle, traffic, and welcomed to Cambridge Mr. W. A. G. Suddaby, who takes up his duties as Traffic Manager on December 30.

Decentralisation

Sir Reginald Wilson, Member of the British Transport Commission and Chairman of the Eastern Area Board, stressed the importance of the measures of decentralisation in the new Eastern Region traffic organisation. He reminded his hearers of the return to the Cambridge district of the name Great Eastern, given to the new building.

Others present at the opening included, besides representatives of many interests in the Eastern Counties:

Eastern Area Board Members: Sir Edmund Bacon, Messrs. A. F. Pegler, J. B. Peile, Jack Tanner.

Eastern Region Headquarters and G.E. Line: Messrs. H. C. Johnson, Assistant General Manager (Traffic) (General Manager designate); Norman Hamilton, Adviser on Public Relations; A. J. White, Assistant General Manager; A. W. Tait, Assistant General Manager (Finance); A. K. Terris, Chief Civil Engineer; H. H. Powell, Architect; K. J. Cook, Chief Mechanical & Electrical Engineer; W. G. Thorpe, Line Traffic Manager (Great Eastern); G. Coaker, Commercial Superintendent (Great Eastern); L. A. A. Taylor, Estate & Rating Surveyor.

Cambridge: Messrs. W. A. G. Suddaby, Traffic Manager; H. S. Crosthwaite, District Operating Superintendent; R. F. Graveson, District Commercial Officer; G. C. Parslew, District Motive Power Superintendent.

Contracts and Tenders

Diesel locomotives required for South Africa

Ganz & Co. Ltd. has received an order from Burma for a four-coach railcar. The air conditioned coaches will be powered by two 150-h.p. diesel motors sunk under the floor.

The British Transport Commission has announced that a contract for 4,800 small wheeled containers of 70-cu. ft. and 1-ton capacity has been placed with W. C. Youngman Limited, Manor Royal, Crawley, Sussex. Some 1,000 containers of this type are already in use. They can be wheeled into and out of railway wagons and are suitable for general merchandise traffic such as cloth, wallpaper, glassware, confectionary, toilet requisites, stationery, and switchgear.

The Soc. Isothermos have received orders for various inside and outside types of Athermos axleboxes for the following stock for S.N.C.F.: 20 diesel-electric locomotives type 040 D.G. 1,400 h.p.; 3 prototype single-phase electric multiple-units for the Northern Region; 59, 64-ton 2,900-h.p. single-phase Bo-Bo electric locomotives; 10, 84-ton 4,500-h.p. high-speed single-phase Bo-Bo electric locomotives; and 17, 1,500-V. d.c. 67-ton 2,900-h.p. light Bo-Bo electric locomotives.

British Railways, Southern Region, have placed the following contracts:—

Saunders Watts Limited, Brighton: new staff accommodation, Brighton Goods

Y. J. Lovell & Son Ltd., Horsham: new staff accommodation, Dorking North

Taylor Woodrow Construction Limited, Southall, Middlesex: new carriage shed, ancillary works and buildings and foundations for carriage washing plant, St. Leonards West Marina

Caffin & Co. Ltd., London, W.C.2: renovations, Blackheath Station

Harland & Wolff Limited, London, E.16: passenger landing stage, Portsmouth (Gosport Ferry)

P. & M. Contractors Limited, London, S.W.1: renovations of canteens and various office buildings, Bricklayers Arms

Structural Waterproofers Limited, London, W.6: waterproofing to asphalt roofs, Nottingham Sub-station

C. & C. J. Pannett, Lewes, Sussex: renovations, Hellingly Station

Leyland Motors Limited has received an order from the North Western Road Car Co. Ltd., for 15 low-weight Tiger Cub motorbuses, PSUC1.1 models with five-speed constant mesh gearboxes and a single-speed rear axle with a ratio of 5.143 to 1. Bodies for the vehicles are to be built by Willowbrook Limited.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call for a tender as follows:—

From South Africa:

(a) TEN/29853

115 single "passenger" diesel-electric or diesel-hydraulic locomotives for service in the Union and South West Africa

Alternatively:

208 twin "passenger" diesel-electric or diesel-hydraulic locomotives

Alternatively:

115 single "goods" diesel-electric or diesel-hydraulic locomotives

(b) TEN/29854

21 light-type diesel-electric or diesel-hydraulic locomotives for South-West Africa, to run over 40 lb. rails.

The issuing authority is the South African Railways Stores Department. The tender Nos. are (a) B.6695 and (b) B.6695 (A). The closing date is March 28, 1958. For each call for tenders a deposit of £50 per set is required in respect of the documents and £50 per set for drawings for initial supply. In the case of subsequent supplies a deposit of £25 per set is required in respect of documents and £25 per set of drawings. Sets of drawings are limited to two per call for tenders per specific principal. These can be obtained from the Chief Stores Superintendent, South African Railways, Room 207, Park Chambers, Rissik Street, Johannesburg. The Board of Trade reference is ESB/30332/57. No further information regarding this tender is available at the Board of Trade.

Notes and News

Canadian Trade Mission Train hauled by "Deltic" Locomotive.—As recorded in our issue of December 6, the 3,300-h.p. English Electric "Deltic" diesel locomotive was used to haul the special Canadian Trade Mission train on one stage of its journey, from Glasgow Central to Manchester Exchange. The illustration shows some members of the party inspecting the locomotive. The locomotive, which is being tested in the London Midland Region, is now rostered to run some

4,000 miles each week. This involves operating for 17 hr. a day, and for six days a week. At present on weekdays the locomotive is handling the 12.37 a.m. Crewe to Euston, and then the 7.55 a.m. Euston to Liverpool, returning to Euston with the 2.10 p.m. from Liverpool. Finally, it returns to Crewe with the 7.20 p.m. from Euston.

Accident in India.—As an electric train carrying Mr. Nehru, Prime Minister of India, left a station on December 15, some 30 people clung to the side of the train. They were shaken off as the train gathered speed and one man was killed.

B.T.C. Telegram of Sympathy.—A telegram expressing the sincerest condolences of the British Transport Commission at the recent railway accident near Codogna, in Italy, has been sent to S. Rissone, Director General, Italian State Railways, by Sir Brian Robertson, Chairman of the Commission. The accident was reported in our issue of December 13.

London Commercial Service Christmas Party.—Mr. H. A. Yates, and members of the London Commercial Service, British Railways, held their Christmas party at the National Provincial Bank Buildings, London, E.C.1, on December 18. This informal function was well attended by some 250 guests, representing a wide range of suppliers and manufacturers who have, during the course of the year, made use of British Railways freight services.

Entertainment to Scottish Region Provosts and Magistrates.—Sir Ian Bolton, Chairman of the Scottish Area Board, and Mr. James Ness, General Manager of the Scottish Region of British Railways, recently entertained railwaymen of the Region who are provosts of Scottish towns and magistrates of the City of Glasgow. They were supported by Mr. P. L. Meldrum, Member, Scottish Area Board and by Mr. C. F. Campbell, Regional Motive Power Superintendent. The provosts and magistrates were: Messrs. J. Flanagan, Baillie, Glasgow; A. Convery, River



Members of the Canadian Trade Mission inspecting the "Deltic" diesel locomotive on arrival at Manchester Exchange Station

Baillie, Glasgow; J. Blackwood, Senior Baillie, Glasgow; A. Fraser, Provost of Keith; J. Forde, Provost of Stevenston; and J. Dunlop, Provost of Maybole. Sir Ian Bolton on this occasion wore his chain of office as Lord Dean of Guild of the City of Glasgow.

Antofagasta (Chili) & Bolivia Railway.—In the last line of the fourth paragraph of our report of the Antofagasta (Chili) & Bolivia Railway Co. Ltd. meeting, on page 719 of our issue of December 20, the date "1935" should read "1955."

Gresham & Craven Expansion.—The new Worsley works of Gresham & Craven Limited, planned as an extension to the Salford works which were opened in 1867 and have now been outgrown, were opened on December 18 by Mr. M. W. Shorter, Managing Director, Westinghouse Brake & Signal Co. Ltd.

"Travel by Tube" Appeal.—London Transport launched a poster appeal to Christmas shoppers to use the tube railways to get about the West End of London more quickly. A special series of posters displayed at 30 in-town stations on the four tube lines between Earls Court and

The address is: Westinghouse Brake & Signal Co. Ltd., Automotive & Industrial Products Division, Hanham Road, Kingswood, Bristol. Tel. Bristol 671781.

Powers-Samas Share Issue.—Powers-Samas Accounting Machines Limited announced recently that 1,500,000 ordinary shares of 10s. each had been allotted and issued for cash at par to Vickers Limited, the parent company of the group.

Canadian Pacific Railway Company Dividend.—At a meeting of the Board of Directors of the Canadian Pacific Railway Company held on December 9, a final dividend of 2 per cent on the preference stock was declared for the year 1957, payable on February 1, 1958, to stockholders of record on December 31, 1957.

Railway & Canal Historical Society.—The Society was recently elected to membership of the Standing Conference for Local History at their annual meeting. Two members of the Society, Mr. Charles Hadfield and Mr. Michael Robbins, gave papers on "Canals in local history" and "The railway in local history" respectively.

Wage Increases in Germany.—Proposals by a mediator for wage increases of 5-6 per cent for West German employees of shipyards and engineering and motor vehicle works have been accepted by both sides of the industries. They will affect some 2,500,000 men. The increase will come into effect on January 1, and the working week will be reduced from 45 to 44 hr. at the beginning of 1959. A section of the employers has stated that the higher wages may lead to lower production or increased prices.

Cable Fire at Victoria Station.—A cable fire on Grosvenor Bridge put the signalling system at Victoria Station, Southern Region, out of action early on the morning of December 16, so that trains could neither enter nor leave the station. Special buses were operated to relieve the normal bus and Underground railway services during the morning peak traffic hours, and diesel-electric generators were coupled up to provide current for signal operation. Normal working was resumed at Victoria soon after 10 a.m.

Carols at Fenchurch Street Station.—The London choir of the Eastern Region Musical Society, comprised of clerks, typists, fitters, and many grades of railway staff, sang carols around the Christmas tree on the concourse of Fenchurch Street Station on the evening of December 23. In addition, on the two days before Christmas, seasonal music was played over the loudspeakers between train announcements. Christmas trees decorated many of the stations on the L.T.S. line and collections were made for the blind and other charities.

Hatch End Station Improvements.—Work has just started on an improvement scheme for Hatch End Station, London Midland Region, which will include the reconstruction of the booking office, waiting rooms, and toilets on platforms 4, 5, and 6. Existing wooden structures on these platforms will be demolished and replaced by new brick buildings. They will have flat timber roofs which will project to make small canopies over the platforms. There will be a combined booking office and waiting room on platform 6 and a waiting room with toilet accommodation

on platforms 4 and 5. The new buildings and platforms will have electric lighting. Hatch End is a suburban station dealing with some 4,000 passengers daily. The work will cost about £9,000 and should be completed by July, 1958.

Whitley Bay Bridge Replacement.—The Minister of Transport & Civil Aviation, Mr. Harold Watkinson, has made a grant of more than £76,000 to the Northumberland County Council towards the cost (£102,000) of replacing the railway bridge on the Whitley Bay—Tynemouth Road (A.193) at Marden Road, Whitley Bay, and its approaches.

English Steel Tool Corporation, Limited.—The English Steel Tool Corporation, Limited, Openshaw, Manchester, a wholly owned subsidiary of English Steel Corporation, Limited, Sheffield, recently opened new premises at 167, Dukes Road, London, W.3. Consisting of a newly fitted out stockroom with appropriate offices, an extensive range of cutting tools is being carried to meet all engineer requirements.

More Business at Butler's Lane.—During November last some 6,200 passengers used the new British Railways, London Midland Region, station at Butler's Lane, which opened for business on September 30. This is 500 more than in October. The station was provided to meet the needs of the new 3,000 house estate now under development. It lies between Four Oaks and Blake Street Stations, and is served by diesel trains to and from Birmingham New Street.

International Bank Loan for Peruvian Corporation?—Peruvian Transport announces from Toronto that a re-equipment loan of \$U.S. 15 million to its wholly-owned subsidiary, the Peruvian Corporation is under advanced negotiation with the International Bank for Reconstruction & Development in Washington. Gross receipts of the railways operated by the Peruvian Corporation for the period July 1 to October 31, 1957, amounted to the equivalent of \$U.S. 4,017,000. Receipts were adversely affected by strikes on the principal railways and by a landslide which disrupted traffic on the Southern Railway.

Improvements at Garston Docks.—The British Transport Commission has approved an expenditure of some £500,000 for the modernisation of the North and Old Docks at the port of Garston, on the right bank of the Mersey. The improvements will include the replacement of hydraulic quay cranes by 11 electric level-luffing cranes of greater lifting capacity and outreach—six for the North Dock and five for the Old Dock; the renewal of the crane tracks on a standard gauge of 15 ft.; and the re-paving of quays with concrete in which new railway lines will be laid flush with the surface.

Lord Mayor of London at Euston Carols.—The Lord Mayor of London, Sir Denis Truscott and the Lady Mayoress, accepted an invitation to be present in the Great Hall at Euston on December 23, when British Railways, London Midland Region, staff sang a programme of carols. Mr. David Blee, General Manager of the London Midland was accompanied by his officers and officers of the British Transport Commission. The carol concert is an annual event at Euston and attracts hundreds of travellers. The programme was introduced by the Rev. W. P. Baddeley.

**IT'S
QUICKER
BY
UNDERGROUND**

a train every few minutes
FROM THIS STATION TO
TOTTENHAM COURT RD. STN.
(for Oxford Street)

3^D
HOURS

2 MINUTES IN THE TRAIN

PLEASE AVOID THE RUSH HOURS

London Transport poster displayed during Christmas shopping period

Liverpool Street direct attention to the frequency of the Underground services to Oxford Circus, Knightsbridge, Piccadilly Circus, and Tottenham Court Road stations, which serve the main shopping centres. The posters, in red and blue on a white background, also show the journey time in minutes and the fare. The posters will remain up for the January sales.

Additional Westinghouse Division.—Since the acquisition of Douglas (Kingswood) Limited, by the Westinghouse Brake & Signal Co. Ltd., a new division of Westinghouse has been formed known as the Automotive & Industrial Products Division. This specialises in road vehicle braking systems, power steering, and air suspension; also pneumatic control systems for a variety of railway, marine, and industrial applications. For these products, the Sales and Engineering Departments, with the works are now centred at Bristol.

Vicar of St. Pancras. The choir of 60 voices includes the Stationmaster at Euston, Mr. H. S. Turrell, and many other staff, of all grades.

Nitrate Railways Co. Ltd.—The joint liquidators of the Nitrate Railways Co. Ltd. announce that a second and final distribution of 1s. 9d. a share will be made to the holders of the £7 ordinary shares and 7 per cent preferred converted ordinary £7 shares. The first distribution was 21s. a share. The railway was taken over by the Chilean Government under a decree of February, 1951.

Brown Bayley Steels Limited Results.—Brown Bayley Steels Limited, the new holding company recently formed to take over Brown Bayley's Steel Works Limited, has announced an interim dividend of 2½ per cent in respect of 1957. Under the scheme, the 300,000 ordinary 2s. 6d. shares of Brown Bayley's Steel Works Limited were replaced by 2,400,000 ordinary £1 shares in the new holding company.

C. C. Wakefield & Co. Ltd. to Acquire Fletcher Miller Limited.—C. C. Wakefield & Co. Ltd. has announced that, subject to contract, it is to acquire the entire share capital of Fletcher Miller Limited, Alma Mills, Hyde, Cheshire, the parent company of a group of 10 companies. Part of the purchase consideration will be the allotment to the vendors of some of the Wakefield unissued ordinary shares; these, when issued, are to be converted into stock.

Dorada Railway Co. Ltd.—The new board of the Dorada Railway Co. Ltd. intends to use the liquid resources of the company for industrial investment. The present name of the company is to be changed to Dorada Holdings, and new articles of association will be adopted. The issued capital is to be reorganised and afterwards will consist of 332,398 ordinary shares of £1 each, issued and fully paid, and 317,602 unclassified £1 shares. The railway undertakings of the company and subsidiaries were purchased by the Colombian Government under an agreement of September 3, 1956.

Associated Commercial Vehicles Limited, Results.—The group net profit of Associated Commercial Vehicles Limited, for the year ended September 30, 1957, is £430,618 (£508,435), subject to audit, after all charges including taxation of £604,282 (£634,556), and after deducting the proportion of profit attributable to minority shareholders at £8,095 (£8,446). The proposed dividend is 12½ per cent (same) less tax, which, with the interim dividend paid of 10 per cent (same) less tax, will absorb £270,070 (£270,070). The dividend on the 5½ per cent redeemable cumulative preference shares paid for the year amounts to £47,438 (£47,438).

British Standard for Steel Tubes and Tubulars.—Produced to supersede the 1947 edition, this British standard applies to welded and seamless, screwed and socketed steel tubes and tubulars, and to plain-end steel tubes, suitable for screwing to B.S.21 pipe threads. Three thicknesses of tubes are specified—light, medium and heavy—with nominal bores of ½ to 6 in. inclusive. The tubes specified in the present edition of the standard conform to the International Organisation for Standardisation recommendations. The 31-page publication contains 12 diagrams and two charts. Copies, price 2s., can be obtained from

British Standards Institution, Sales Branch, 2, Park Street, London, W.1.

Lightalloys Limited Acquisition.—Lightalloys Limited, a subsidiary of the Mangane Bronze & Brass Co. Ltd., is to acquire the whole of the shares and debentures of the Caplin Engineering Co. Ltd., and Capco (Sales).

Railway Benevolent Institution.—At its meeting on December 17, the Board of the Railway Benevolent Institution granted annuities to three widows and two members, involving an additional liability of £112 10s. a year. To meet cases of immediate necessity, 91 gratuities amounting to £897 were awarded. Grants from the Casualty Fund during November totalled £1,643 4s.

Dowsett Holdings Profit.—The group profits of Dowsett Holdings Limited for the year to March 31 last were £636,156 compared with £408,404 the year before. After depreciation of £250,061 (£203,918), tax of £164,578 (£78,754) and so on, the group net profit was £196,920 (£104,752). Turnover rose by almost 30 per cent and it is stated that growth has continued into the early months of the current year, with substantial orders in hand.

Bus Electronic Scanning Indicator.—An electronic device which will help London buses to overcome the effects of traffic congestion was demonstrated by London Transport Executive on December 19. The bus electronic scanning indicator, known as "BESI," uses an electronic "eye" to read identification numbers reflected from the buses. The numbers appear on a control panel at a central point, so that a controller can see at a glance the position of any bus and the

situation on the route as a whole. Plans for the use of BESI in London were explained by Mr. J. B. Burnell, Operating Manager, Central Road Services, and the apparatus was explained by Mr. T. S. Pick, Chief Electrical Engineer. The first BESI apparatus has recently been placed on list at Old Brompton Road on route 74.

Call to Establish Railway Museum.—A meeting representative of six railway societies decided in London on December 18 to call on the British Transport Commission to implement its undertaking in 1951 to establish a national railway museum. They were particularly concerned about an unconfirmed report that the large exhibits section of the Railway Museum at York may have to make way for a bus station.

Launching of M.V. "Bolton Abbey."—One of the two new motor vessels being built by Brooke Marine Limited of Lowestoft for the Hull/Rotterdam passenger/cargo service of Associated Humber Lines Limited, was launched on December 11 at Lowestoft and named *Bolton Abbey* by Mrs. L. E. Marr, wife of the General Manager, Associated Humber Lines Limited. The vessel is being built to the design prepared by the British Transport Commission consultants, Burness, Corlett & Partners, in conjunction with Associated Humber Lines Limited technical officers. It will have twin screws driven by Ruston & Hornsby diesel engines through M.W.D. oil operated reverse reduction gears at a service speed of 15½ knots.

Forthcoming Meetings

January 1 (*Wed.*)—Electric Railway Society, at the Fred Tallant Hall, 153, Drummond Street, London, N.W.1., at 7.15 p.m. Paper on "Metropolitan Railway electric rolling stock," by Mr. V. Goldberg.

January 3 (*Fri.*)—The Railway Club, at 320, High Holborn, London, W.C.1, at 7 p.m. Paper on "Some thoughts on timetables," by Mr. E. J. T. G. Bagshawe.

January 3 (*Fri.*)—British Railways (Southern Region) Lecture and Debating Society. New Year social evening at the Waterloo Dining Club.

January 6 (*Mon.*)—Historical Model Railway Society, at the Railway Tavern, Liverpool Street, London, E.C.2, at 7 p.m. Talk on the building of a model "Dean" single locomotive by Mr. D. G. Webster.

January 6 (*Mon.*)—Railway Correspondence & Travel Society, Northampton Branch, at the Liberal Club, Castilian Street, Northampton, at 7.30 p.m. Paper on "The last drop of steam in Ireland," illustrated by lantern slides, by Mr. D. R. Smith.

January 6 (*Mon.*)—Institute of Transport, Darlington Group, at United House, Grange Road, Darlington, at 7 p.m. Paper on "Transport in Nigeria," by Mr. E. Dalton.

January 7 (*Tue.*)—Permanent Way Institution, Leeds & Bradford Section, in the British Railways Social & Recreation Club, Ellis Court, Leeds City North Station, at 7 p.m. Sound and colour films entitled "Colour under Control," presented by Ingham Clark & Company, of Wortley, Leeds 12.

Claims Prevention Poster



The third in a series of claims prevention posters being displayed during the next few months on British Railways staff notice boards in all Regions (see our December 13 issue)

Also "Steel Road," film loaned by The United Steel Companies, Limited, Sheffield.

January 7 (Tue.).—South Wales & Monmouthshire & Docks Lecture & Debating Society, at the Angel Hotel, Westgate Street, Cardiff, at 6.30 p.m. Paper on "B.R.S., first decade: what next?" by Mr. J. Freeguard, Divisional Manager, Western Division, British Road Services.

January 7 (Tue.).—Institute of Transport, Midland Section, at the Exchange and Engineering Centre, Birmingham, at 6.30 p.m. Paper on "European transport," by Mr. C. F. Klapper.

January 8 (Wed.).—Permanent Way Institution, London Section, at the Headquarters of the British Transport Commission, 222, Marylebone Road, N.W.1, at 6.30 p.m. Paper on "Heavy plant," illustrated by lantern slides, by Mr. E. C. Cookson.

January 8 (Wed.).—British Railways Southern Region Lecture & Debating Society, at the Chapter House, St. Thomas' Street, London, S.E.1, at 6 p.m. Paper: "At home with the Shipping Department," by Mr. R. E. Sinfield, Continental & Shipping Manager, Southern Region.

January 8 (Wed.).—Institution of Railway Signal Engineers, York Section, at the Signalling School, Loft Green, York, at 5.30 p.m. Paper on "The work and problems of a district linesman," by Mr. R. F. Dean.

January 8 (Wed.).—Institute of Transport, Southern Section, at the Harbour Board Offices, Southampton, at 5 for 5.45 p.m. Paper on "The oil industry in relation to transport," by Mr. A. G. Taylor, manager, Inland Distribution Centre, Esso Petroleum Co. Ltd.

January 9 (Thu.).—British Railways (Western Region) London Lecture & Debating Society, at the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Railway quiz-questions on railway operation and administration. Questionmaster, Mr. H. G. Bowles, Assistant General Manager (Administration), Western Region.

January 10 (Fri.).—Institute of Transport Northern Section, at the Royal Station Hotel, Newcastle-upon-Tyne, at 7 p.m. Paper on "Transport in modern times," by Major-General G. N. Russell.

January 11 (Sat.).—Permanent Way Institution, East Anglia Section, at Cambridge at 2.15 p.m. Debate: "Maintenance, old v. new methods." For old methods—Messrs. G. W. Baker and H. S. Bullard. For new methods—Messrs. W. A. Sutton and A. H. Gorham.

January 11 (Sat.).—Railway & Canal Historical Society, at the London Transport Executive Library, 55, Broadway, London, S.W.1. Talk by Mr. Charles F. Klapper on "The Mid-Kent Line."

January 13 (Mon.).—Institute of Transport, at the Jarvis Hall (R.I.B.A.), 66, Portland Place, London, W.1, at 5.45 p.m. Paper on "Railway freight traffic operation in the light of railway modernisation," by Mr. C. P. Hopkins.

January 14 (Tue.).—Railway Correspondence & Travel Society, East Midlands Branch, at the N.C.S. Guild Room, Toll Street, Nottingham, at 7.30 p.m. Paper on "Locomotive working," by Mr. P. Bagguley.

January 15 (Wed.).—Institution of Railway Signal Engineers, London

Section, at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 6 p.m. "Electronic switching"—informal lecture by Mr. N. C. Smart (G.E.C. Telephone Works).

January 16 (Thu.).—Model Railway Club, at Caxton Hall, Westminster, S.W.1, at 7.45 p.m. Talk on "Dugald Drummond as I knew him," by Mr. S. R. Arnold.

January 17 (Fri.).—Railway Correspondence & Travel Society, London Branch, at the Railway Clearing House, Eversholt Street, London, N.W.1, at 7.15 p.m. Paper on "The Midland Railway's London extension," illustrated by lantern slides, by Mr. S. Summerson.

Railway Stock Market

Stock markets have experienced the usual year-end contraction of business, and with buyers still cautious, prices are showing small, irregular movements. Sentiment has been affected a good deal by a tendency to await international developments, not only between West and East, but also in the economic sphere because of continued fears that trade is slowing down in the U.S. evidence of which is provided by the fall in steel production and by other pointers. British Funds have not held best levels recorded recently, but attracted more attention because it is argued that, even if there is no early cut in the bank rate, a cut some time next year can be expected, and in the circumstances higher price levels for British Funds are a reasonable expectation. In contrast with the rather better trend in gilt-edged stocks, industrial shares have been very uncertain because of reports of some slowing down which has come from a number of important industries. It seems certain that a fair number of dividends will be reduced next year if present trends continue, but on the other hand, the prevailing view is that in most cases this is in all probability more than discounted in current share prices. Prospects of a rally in stock markets probably depend considerably on what happens on Wall Street, but hopes are centred very much on the possibility of an early reduction in the bank rate and, further ahead, on tax reductions in the Budget.

There has again been only very limited interest in foreign railway stocks, most of which have scarcely been tested by dealings. In fact, most of them are closing the year at near their lowest levels touched in the past 12 months. Similar remarks apply to many other groups of securities and reflect the general trend in markets. Values have fallen sharply this year largely owing to the rise in the bank rate from 5 per cent to 7 per cent, which altered the general yield basis of markets, War Loan $3\frac{1}{2}$ per cent, which is now just under $\text{£}62\frac{1}{2}$, has been up to $\text{£}75$ and down to $\text{£}60\frac{1}{2}$ this year.

There has been recently a little more activity in Antofagasta ordinary stock, which is 18 at the time of writing, comparing with the year's highest and lowest levels of 39 and 16. Moreover, the company's preference stock is 36 at the time of writing, which compares with the best and lowest for the year of 50 and 33 respectively.

Costa Rica ordinary stock, now 16 $\frac{1}{2}$, had extreme prices this year of 29 and 16. Elsewhere, Chilean Northern first debentures, which are currently 39 $\frac{1}{2}$, had extremes in the year of 46 $\frac{1}{2}$ and 36 $\frac{1}{2}$. To take

another example, extremes for Guayaquil & Quito assented bonds have been 86 and 71 $\frac{1}{2}$ and the current price is 78 $\frac{1}{2}$. International of Central America preferred have been up to $\text{£}184$ during the year and are now $\text{£}127$. Elsewhere, year's extremes for San Paulo 3s. units have been 48. 1 $\frac{1}{2}$ d. and 2s. 1 $\frac{1}{2}$ d. and the current price is also 2s. 1 $\frac{1}{2}$ d. United of Havana second income stock, to take another example, is now 7 $\frac{1}{2}$; the extremes in the year were 8 $\frac{1}{2}$ and 6.

Canadian Pacifics, which are $\text{£}45\frac{1}{2}$ at the time of writing, are at the lowest this year, having moved closely with Wall Street markets; the year's high was $\text{£}75\frac{1}{2}$. White Pass shares, now $\text{£}13\frac{1}{2}$ are also at the year's lowest at the time of writing; the year's highest was $\text{£}26\frac{1}{2}$. Elsewhere Nyasaland Railways shares, which are currently 10s. 3d. have been up to 12s. 4 $\frac{1}{2}$ d. and down to 8s. 4 $\frac{1}{2}$ d. There has been some speculation even in old Russian railway bonds. Russian South Eastern, for example, are now normally 15s.; they have been up to 25s. and down to 5s.

As was to be expected, shares of locomotive builders and engineers reflected the general trend in stock markets very closely and are finishing the year well below the highest reached in 1957, but generally above the year's lowest. Beyer Peacock 5s. shares, for instance, are now 8s. comparing with extremes for the year of 11s. 3d. and 7s. 3d. Charles Roberts 5s. shares (extremes 13s. and 7s. 7 $\frac{1}{2}$ d.) are now 8s. 4 $\frac{1}{2}$ d. Westinghouse Brake (year's highest and lowest 41s. and 28s. 9d.) are 32s. Gloucester Wagon 10s. shares are 14s. 3d.; extremes were 17s. 6d. and 12s. Wagon Repairs 5s. shares, which are 13s. 3d. at the time of writing, have been up to 14s. 4 $\frac{1}{2}$ d. and down to 11s. 1 $\frac{1}{2}$ d. this year. G. D. Peters are now 28s. 9d., comparing with the year's extremes of 35s. and 23s. 9d.

OFFICIAL NOTICES

SAMUEL BUTLER & CO. LTD., 9, Fargate House, 21, Fargate, Sheffield. **SENIOR AGENT.** Senior Agent required for our Barton High Level Bridge Contract at Eccles, near Manchester. The contract consists of the erection of 6,000 tons of riveted girders and bracings in 18 spans. Applicants should have had previous experience in bridge works and must be capable of controlling site personnel and sub-contractors involved on the same scheme. The successful applicant will be required on site February/March, 1958. The duration of the contract is approximately 2 years, after which time a permanent post may be made available to the right person. Applications from persons holding responsible positions and earning not less than $\text{£}1,000$ p.a., should be made to the above address. All applications will be treated in the strictest confidence.

ASSISTANT ENGINEER (MECHANICAL) required for their London Office by the Crown Agents for Overseas Governments and Administrations for appointment normally to pensionable establishment on probation for two years. Salary scale $\text{£}805$ by $\text{£}25$ to $\text{£}855$ by $\text{£}30$ to $\text{£}1,005$ by $\text{£}40$ to $\text{£}1,165$ by $\text{£}45$ to $\text{£}1,210$ by $\text{£}40$ to $\text{£}1,250$ a year; $\text{£}805$ minimum linked to entry at age 25 and subject to increase at rate of one increment for each year above that age up to 34. Fully qualified officers at least 27 years old may be eligible for special increase of $\text{£}75$ after two years' service. Prospect of promotion. Candidates should have passed qualifying examination A.M.I.Mech.E. or equivalent examination, have served apprenticeship or pupillage in the rolling stock department of British Railways or with carriage and wagon builders or a firm specialising in manufacture wharf or railway breakdown cranes, and also have subsequent drawing office experience in design of carriages and wagons, diesel railcars or cranes, together with a sound knowledge of modern workshop practice. Duties include preparation of contract specifications, examination and approval of drawings, design calculations, and technical correspondence.—Write to the Crown Agents, 4, Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2A/40807/RA.

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